



# SERVICE MANUAL

DUAL BAND FM TRANSCEIVER

# IC-2820H

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S-14325XZ-C1  
Mar. 2007

Icom Inc.

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## INTRODUCTION

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This service manual describes the latest service information for the **IC-2820H** DUAL BAND FM TRANSCEIVER at the time of publication.

MODEL	VERSION
IC-2820H	USA-01
	AUS-01
	KOR-01
	TPE-01
	EXP-01

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

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## CAUTION

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**NEVER** connect the transceiver to an AC outlet or to a DC power supply that uses more than 15 V. This will ruin the transceiver.

**DO NOT** expose the transceiver to rain, snow or any liquids.

**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 (J1). This could damage the transceiver's front end.



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## ORDERING PARTS

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

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

### <SAMPLE ORDER>

1110003491 S.IC TA31136FNG IC-2820H MAIN UNIT 5 pieces  
8820001210 Screw 2438 screw IC-2820H Top cover 10 pieces  
Addresses are provided on the inside back cover for your convenience.

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## REPAIR NOTES

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1. Make sure a 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 signal generator or a sweep generator.
7. **ALWAYS** connect a 50 dB to 60 dB attenuator between the transceiver and a Modulation Analyzer or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

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**GENERAL**

- Frequency coverage : (unit: MHz)

Version	Left Band	Right Band
<b>USA, General</b>	Rx: 118–549.995* <sup>1</sup> Tx: 144–148, 430–450* <sup>2</sup>	Rx: 118–173.995* <sup>1</sup> , 375–549.995,* <sup>3</sup> 810–999.99* <sup>4</sup> Tx: 144–148, 430–450* <sup>2</sup>
<b>Australia</b>	Tx/Rx: 144–148, 430–440	
<b>Taiwan</b>	Tx/Rx: 144–146, 430–432	
<b>Korea</b>	Tx/Rx: 144–146, 430–440	

\*<sup>1</sup>Guaranteed: 144–148 MHz range only.; \*<sup>2</sup>Guaranteed: 440–450 MHz range for the USA, 430–440 MHz for the General version; \*<sup>3</sup>Not guaranteed; \*\*824.010 to 848.990 and 869.010 to 893.990 MHz ranges are inhibited for USA version and not guaranteed.

- Type of emission : FM, AM (Receive only),  
DV (optional UT-123 is required)
- Number of memory channels : 522 (incl. 20 scan edges and 2 calls)
- Frequency resolution : 5, 6.25, 10, 12.5, 15, 20, 25, 30, 50 kHz
- Operating temperature range : –10°C to +60°C; +14°F to +140°F
- Frequency stability : ±2.5 ppm (–10°C to +60°C)
- Power supply requirement : 13.8 V DC ±15%
- Current drain (at 13.8 V DC: approx.):
  - Transmit at 50 W 13 A\*  
\* 10.5 A (at 25 W) only for the Taiwan version
  - Receive standby 1.2 A  
(simultaneous receive) max. audio 1.8 A
- Antenna connector : SO-239 (50 Ω)×2 (Tx/Rx and Diversity)
- Dimensions (proj. not included) :
  - Main Unit 150(W) × 40(H) × 187.7(D) mm  
5<sup>29</sup>/<sub>32</sub>(W) × 1<sup>9</sup>/<sub>16</sub>(H) × 7<sup>13</sup>/<sub>32</sub>(D) in
  - Remote controller 150(W) × 58(H) × 31.5(D) mm  
5<sup>29</sup>/<sub>32</sub>(W) × 2<sup>9</sup>/<sub>32</sub>(H) × 1<sup>1</sup>/<sub>4</sub>(D) in
- Weight (approx.) :
  - Main unit 1.5 kg; 3 lb 5 oz
  - Remote controller 210 g; 7.4 oz (incl. separation cable)

**TRANSMITTER**

- Modulation system : Variable reactance frequency modulation
- Output power : 50/15/5 W\* (approx.)  
\*25/15/5 W only for the Taiwan version.
- Max. frequency deviation : ±5.0 kHz (wide)  
±2.5 kHz (narrow)
- Spurious emissions : Less than –60 dB
- Microphone connector : 8-pin modular (600 Ω)

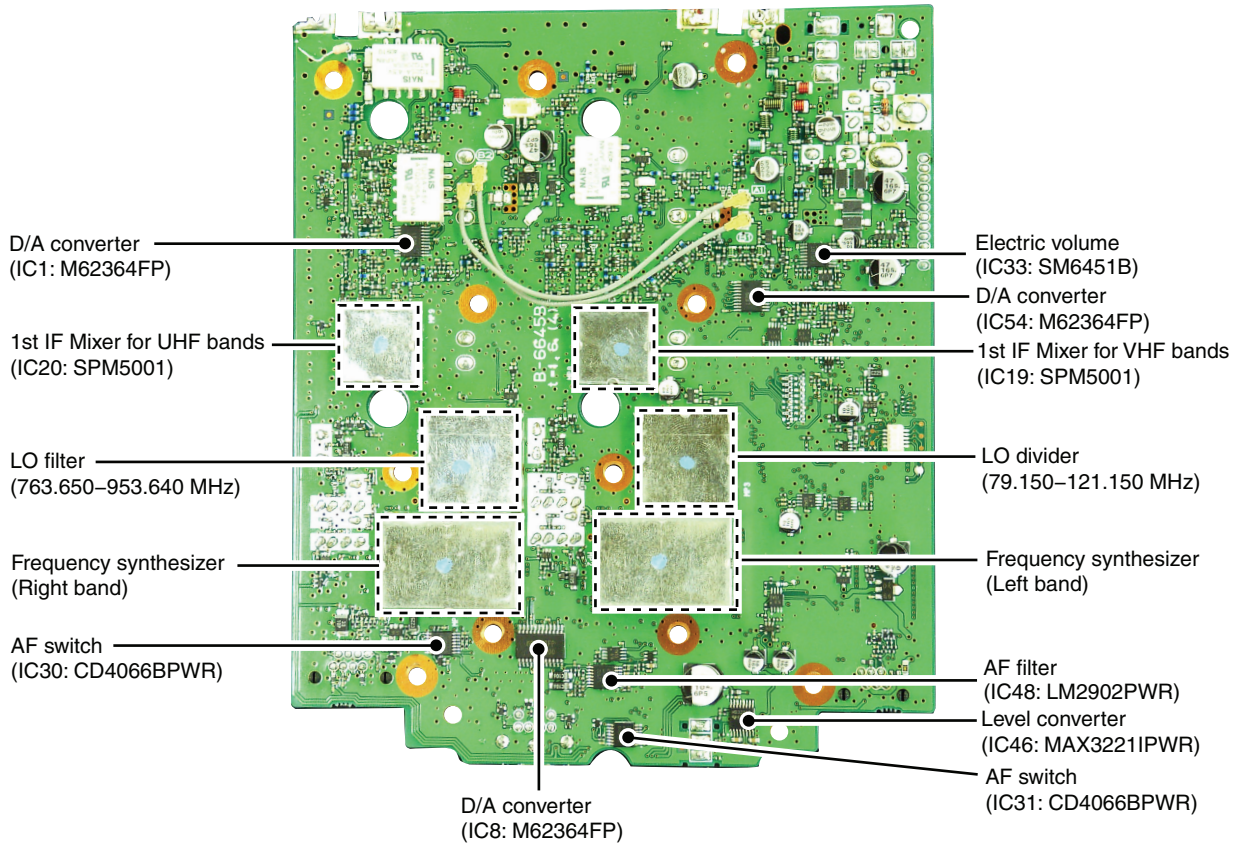
**RECEIVER**

- Receive system : Double-conversion superheterodyne
- Intermediate frequencies :
  - Left band 1st: 38.85 MHz, 2nd: 450 kHz
  - Right band 1st: 46.35 MHz, 2nd: 450 kHz
- Sensitivity (amateur bands only):
  - FM (12 dB SINAD) Less than 0.18 μV
  - DV (BER 1%) Less than 0.35 μV  
(optional UT-123 is required)
- Squelch sensitivity<sup>†</sup> (threshold) : Less than 0.13 μV
- Selectivity<sup>†</sup> (typical) :
  - Wide More than 10 kHz/6 dB  
Less than 30 kHz/60 dB
  - Narrow More than 6 kHz/6 dB  
Less than 20 kHz/60 dB
  - DV (optional UT-123 is required) More than 50 dB
- Spurious and image rejection<sup>†</sup> : More than 60 dB  
\*More than 55 dB for UHF on left band.
- AF output power<sup>†</sup> (at 13.8 V DC) : More than 2.4 W at 10% distortion with an 8 Ω load
- Ext. speaker connectors : 3-conductor 3.5 (d) mm (1/8")/8 Ω

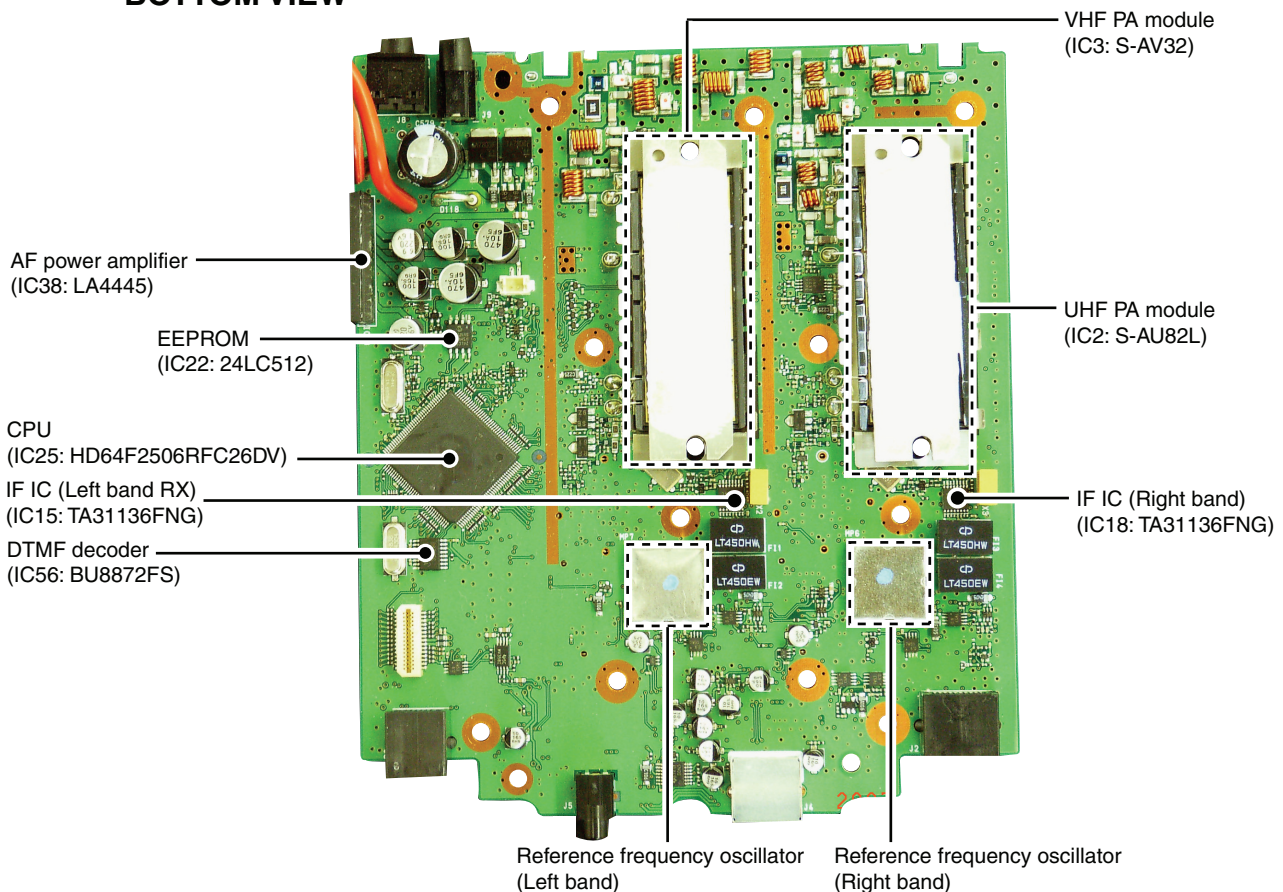
<sup>†</sup>Guaranteed 144–146 or 144–148 MHz and 430–440 or 440–450 MHz ranges only.

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

## • TOP VIEW



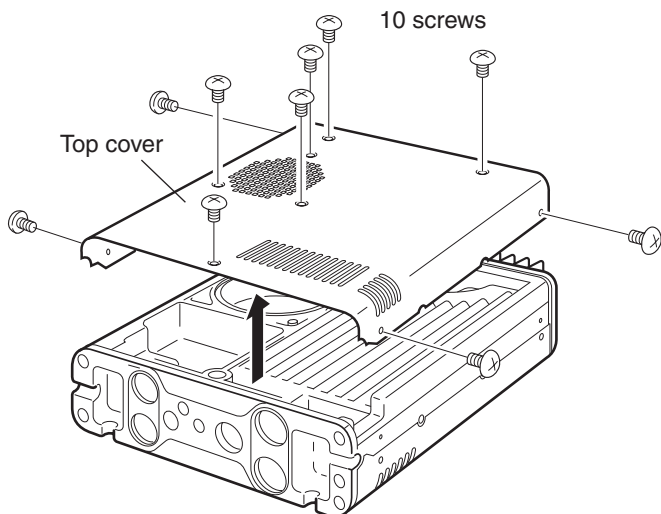
## • BOTTOM VIEW



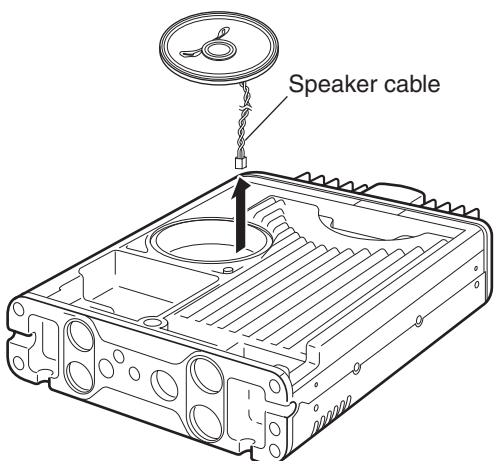
# SECTION 3 DISASSEMBLY INSTRUCTION

## 1. Removing the top cover

① Unscrew 10 screws, then remove the top cover.

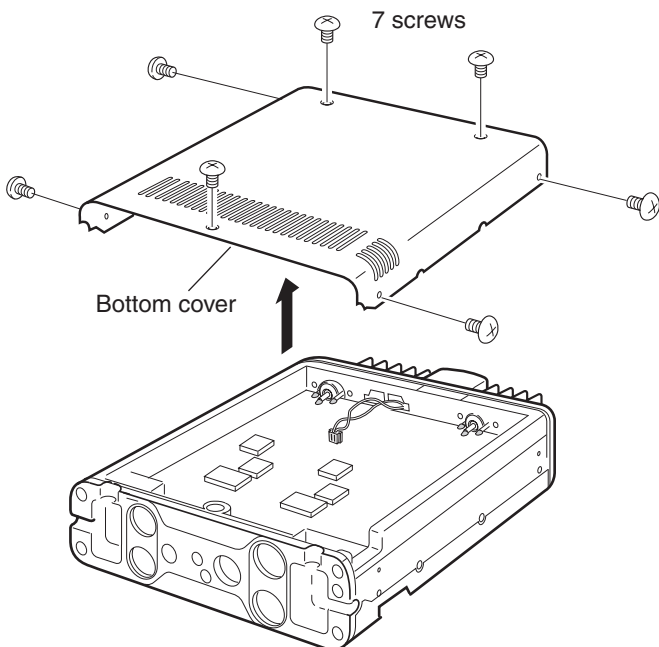


② Disconnect the speaker cable.



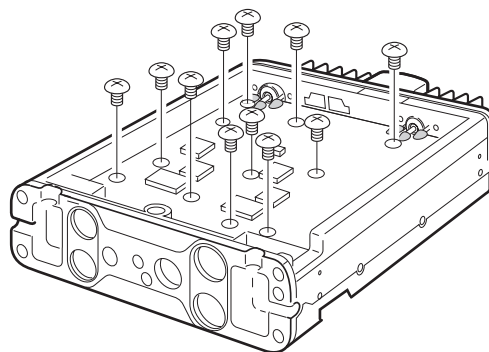
## 2. Removing the bottom cover

① Unscrew 7 screws, then remove the bottom cover.

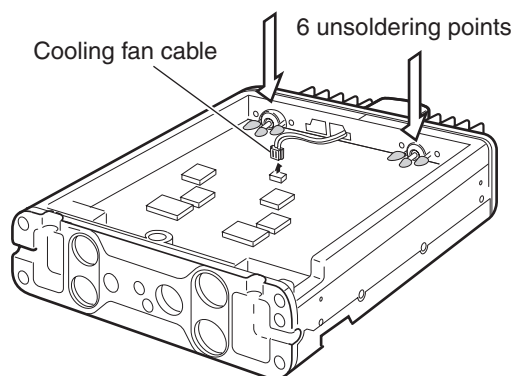


## 3. Removing the MAIN UNIT

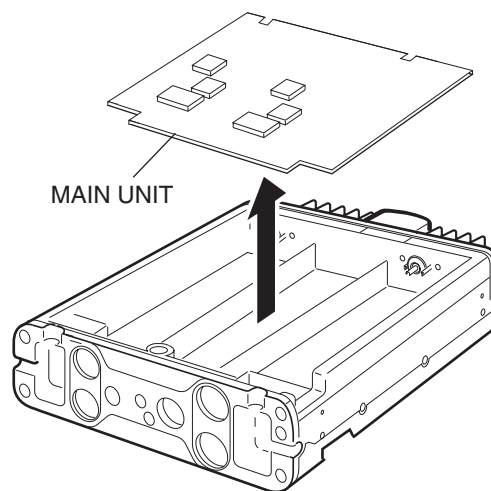
① Unscrew 11 screws from the MAIN UNIT.



② Disconnect the cooling fan cable, and unsolder 6 points at the antenna connectors (grey colored).



③ Remove the MAIN UNIT in the direction of the arrow.



4-1 RECEIVER CIRCUITS

RF CIRCUITS

<Left band>

• 118–174 MHz

The received signals from the antenna connector ANT-1 (J1) are passed through two LPFs (L101, 104, 108, C342, 346; L88, 92, 96, C318, 326, 330), then applied to the RF amplifier (Q37) via TX/RX switch (D75). The amplified signals are passed through the RX switch (RL2), attenuator (D68) and tuned BPF (D55, 66), before being applied to another RF amplifier (Q33). The amplified signals are applied to the 1st mixer (IC19) via the another tuned BPF (D41, 44) and RX switch (D38).

While the diversity operation is activated, the received signals are also input from ANT-2 (J2). The received signals are passed through two LPFs (L103, 106, 109, C344, 348; L90, 93, 98, C319, 327, 348), antenna switch (D65, 72) and limiter (D64, 67), then applied to the RF amplifier (Q39).

The amplified signals are applied to the RX switch (RL2), and gone through the same process as the received signals from ANT-1 (J1).

• 174–260 MHz

The received signals from the antenna connector (J1) are passed through two RX switches (RL3 and D56) and the tuned BPF (D51), then applied to the RF amplifier (Q34). The amplified signals are passed through the BPF (D45), attenuator (R139, 144, 147) and RX switch (D36) before being applied to the 1st mixer (IC19).

• 260–375 MHz

The received signals from the antenna connector (J1) are passed through two RX switches (RL3 and D57) and the tuned BPF (D50), then applied to the RF amplifier (Q35).

The amplified signals are passed through the BPF (D465), attenuator (R142, 143, 150) and RX switch (D37) before being applied to the 1st mixer (IC19).

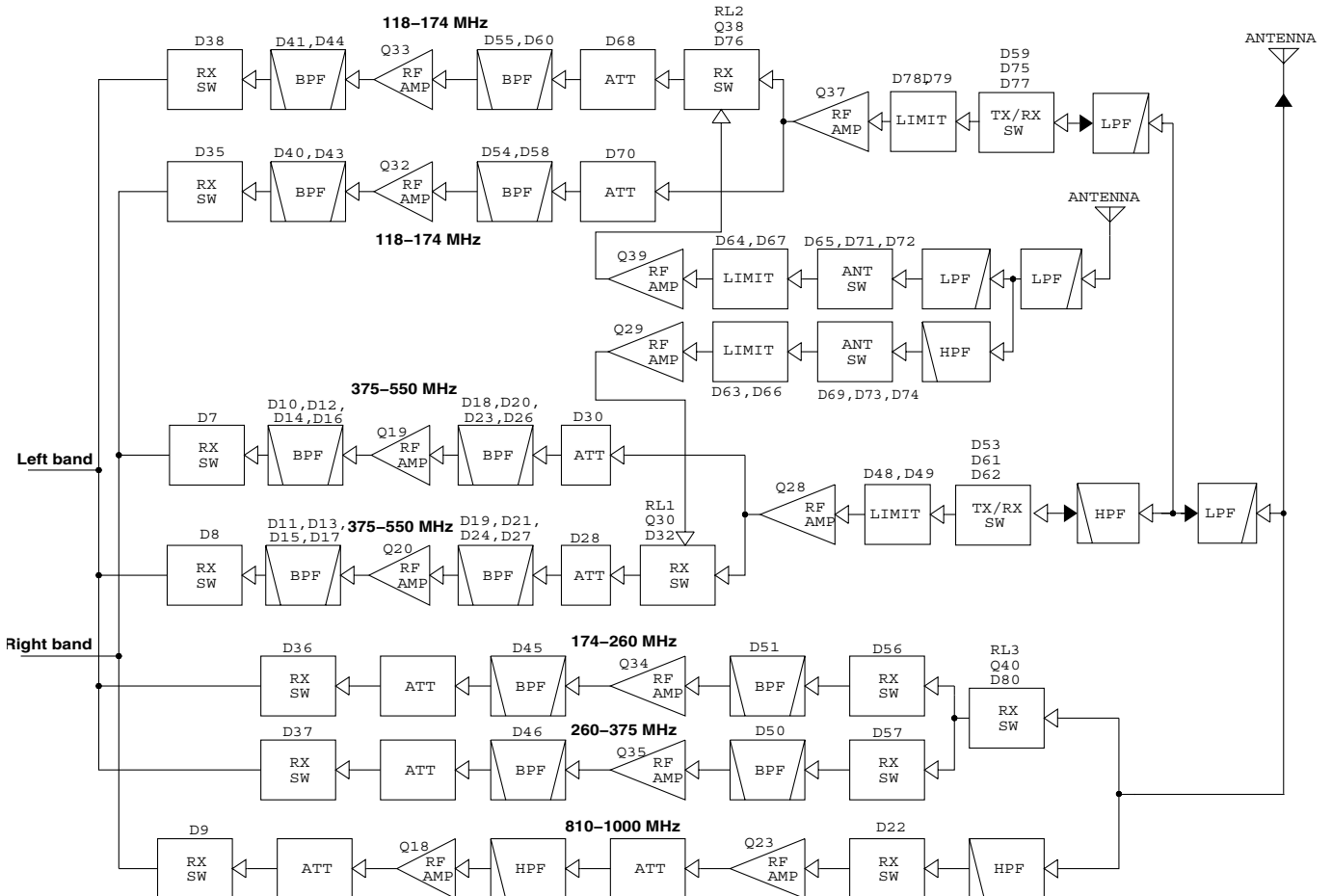
• 375–550 MHz

The received signals from the antenna connector (J1) are passed through the LPF (L101, 104, 108, C342, 346) and HPF (L77, 80, C296, 297, 303, 308), then applied to the RF amplifier (Q28) via TX/RX switch (D53, 61, 62). The amplified signals are passed through the RX switch (RL1), attenuator (D28) and tuned BPF (D19, 21, 24, 27), before being applied to another RF amplifier (Q20). The amplified signals are applied to the 1st mixer (IC19) via the another tuned BPF (D11, 13, 15, 17) and RX switch (D8).

While the diversity operation is activated, the received signals are also input from antenna connector ANT-2 (J2). The received signals are passed through the LPF (L103, 106, 109, C344, 348), HPF (L95, 99, C329, 333, 338), antenna switch (D69, 73, 74) and limiter (D63, 66), then applied to the RF amplifier (Q29).

The amplified signals are applied to the RX switch (RL1), and gone through the same process as the received signals from ANT-1 (J1).

• RF CIRCUITS



## 1ST IF CIRCUITS

RX signals from the RF circuits are converted into the 38.85 MHz 1st IF signal by being mixed with LO signals from the left band VCO (Q111, D145-147).

The converted IF signal from the 1st mixer is passed through the IF filter (F15) to be filtered. The filtered IF signal is applied to the 1st IF amplifier (Q66) via the limiter (D88). The amplified 1st IF signal is applied to the IF IC (IC15, pin 16)

## 2ND IF AND DEMODULATOR CIRCUITS (Fig. 2)

IC15 is an IF IC which contains 2nd mixer, limiter amplifier, noise amplifier, quadrature detector and RSSI circuit, etc. in its package.

The 1st IF signal from the 1st IF amplifier (Q66) is converted into the 450 kHz 2nd IF signal by being mixed with tripled reference frequency signal (38.4 MHz) from the PLL IC (IC41) via the tripler (Q105). The converted 2nd IF signal is output from pin 3, and passed through the ceramic filter (F11 for narrow mode, F12 for wide mode) to remove sideband noise, then applied to the IF IC from pin 5 again.

### • FM DEMODULATOR

The filtered 2nd IF signal from pin 5 is amplified at the limiter amplifier, and FM-demodulated at the quadrature detector circuit. The demodulated AF signals are output from pin 9 and routed to the AF circuits via two AF switches (IC11 and IC13).

### • AM DEMODULATOR CIRCUITS

In the AM mode, the 2nd IF signal from the F12 is applied to the AM-demodulator circuit (Q55, Q57). The demodulated AF signals are routed to the AF circuits via two AF switches (IC11 and IC13).

## SQUELCH CIRCUITS

### • NOISE SQUELCH

A portion of FM-demodulated AF signals from the IF IC (IC15, pin 9) are level-adjusted by D/A converter (IC8), and passed through the noise filter (IC15 and some R and C) to be filtered noise components (30 kHz and above signals) in the AF signals. The filtered noise components are detected in the IC15 and output from pin 13, then applied to the CPU (IC25, pin 100) as "L\_SQL" signal.

Then the CPU outputs "L\_AF\_MUTE" signal from pin 82 to the speaker mute switch (Q102), according to the "L\_SQL" signal level. Thus the AF line is connected to the GND to turn the AF output OFF.

### • CTCSS/DTCS

CTCSS/DTCS signals in the demodulated AF signals from the AF switch (IC13) are passed through the tone filter (Q41). The filtered CTCSS/DTCS signals are applied to the CPU IC25, pin 70) as "L\_DTCSIN" signal. The CPU (IC25) compares the applied signal and the set CTCSS/DTCS, then outputs control signal as same as "NOISE SQUELCH."

### • DTMF

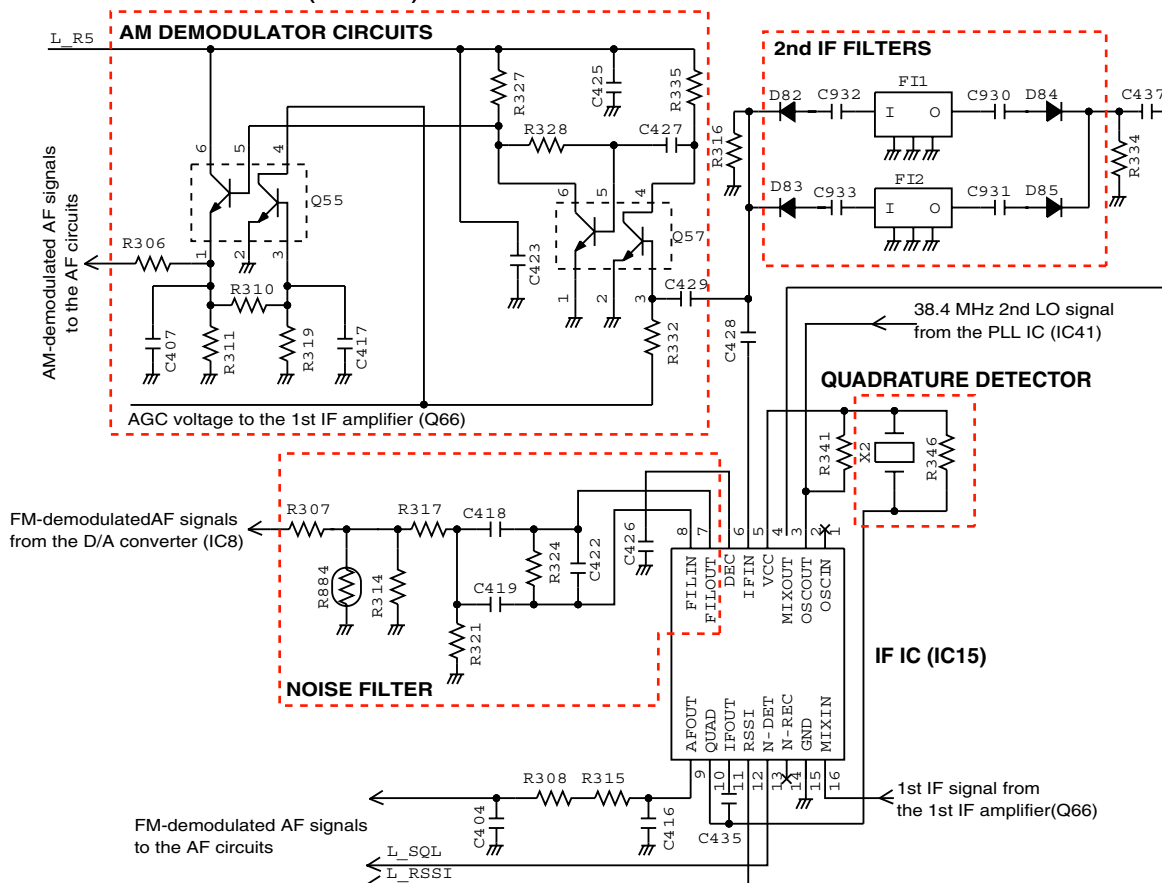
DTMF signals in the demodulated AF signals from the AF switch (IC13) are passed through two AF switches (IC57 and IC58), then applied to the DTMF decoder (IC56) to be decoded.

## AF CIRCUITS

The AM/FM-demodulated AF signals from the AF switch (IC11) are passed through the AF filter (Q47). The filtered AF signals are applied to the electric volume (IC33) to be adjusted its level. The level-adjusted AF signals are applied to the dual AF power amplifier (IC38) to obtain AF output power level, then applied to the internal (CHASSIS; SP1) or an external speaker via external speaker jack (J7).

If an external speaker is connected to the J8, the level-adjusted AF signals from the electric volume (IC33) are applied to the connected speaker.

## • 2ND IF AND DEMODULATOR CIRCUITS (LEFT BAND)





## RF CIRCUITS

### <Right band>

#### • 118–174 MHz

The received signals from the antenna connector ANT-1 (J1) are passed through two LPFs (L101, 104, 108, C342, 346; L88, 92, 96, C318, 326, 330), then applied to the RF amplifier (Q37) via TX/RX switch (D59). The amplified signals are passed through the attenuator (D70) and tuned BPF (D54, 58), before being applied to another RF amplifier (Q32). The amplified signals are applied to the 1st mixer (IC20) via the another tuned BPF (D40, 43) and RX switch (D35).

#### • 375–550 MHz

The received signals from the antenna connector (J1) are passed through the LPF (L101, 104, 108, C342, 346) and HPF (L77, 80, C296, 297, 303, 308), then applied to the RF amplifier (Q28) via TX/RX switch (D53, 61, 62). The amplified signals are passed through the attenuator (D30) and tuned BPF (D18, 20, 23, 26), before being applied to another RF amplifier (Q19). The amplified signals are applied to the 1st mixer (IC20) via the another tuned BPF (D10, 12, 14, 16) and RX switch (D7).

#### • 810–1000 MHz

The received signals from the ANT-1 (J1) are passed through the HPF (L102, 105, 107, 110, C337, 339, 340, 343, 347, 349) and RX switch (D22), then applied to the RF amplifier (Q23). The amplified signals are passed through the attenuator (R39, 40, 51), and applied to the another RF amplifier (Q18) to be amplified again. The amplified signals are then passed through another attenuator (R14) and RX switch (D9) before being applied to the 1st mixer (IC20).

## 1ST IF CIRCUITS

RX signals from the RF circuits are converted into the 46.35 MHz 1st IF signal by being mixed with LO signals from the right band VCO (Q72, D89, 90; Q73, D87, 91, 92).

The converted IF signal from the 1st mixer (IC20) is passed through the IF filter (IF6) to be filtered. The filtered IF signal is applied to the 1st IF amplifier (Q75) via the limiter (D100). The amplified 1st IF signal is applied to the IF IC (IC18, pin 16)

## 2ND IF AND DEMODULATOR CIRCUITS

IC15 is an IF IC which contains 2nd mixer, limiter amplifier, noise amplifier, quadrature detector and RSSI circuit, etc. in its package.

The 1st IF signal from the 1st IF amplifier (Q75) is converted into the 450 kHz 2nd IF signal by being mixed with tripled reference frequency signal (45.9 MHz) from the PLL IC (IC14) via the tripler (Q52). The converted 2nd IF signal is output from pin 3, and passed through the ceramic filter (FI3 for narrow mode, FI4 for wide mode) to remove sideband noise, then applied to the IF IC from pin 5 again.

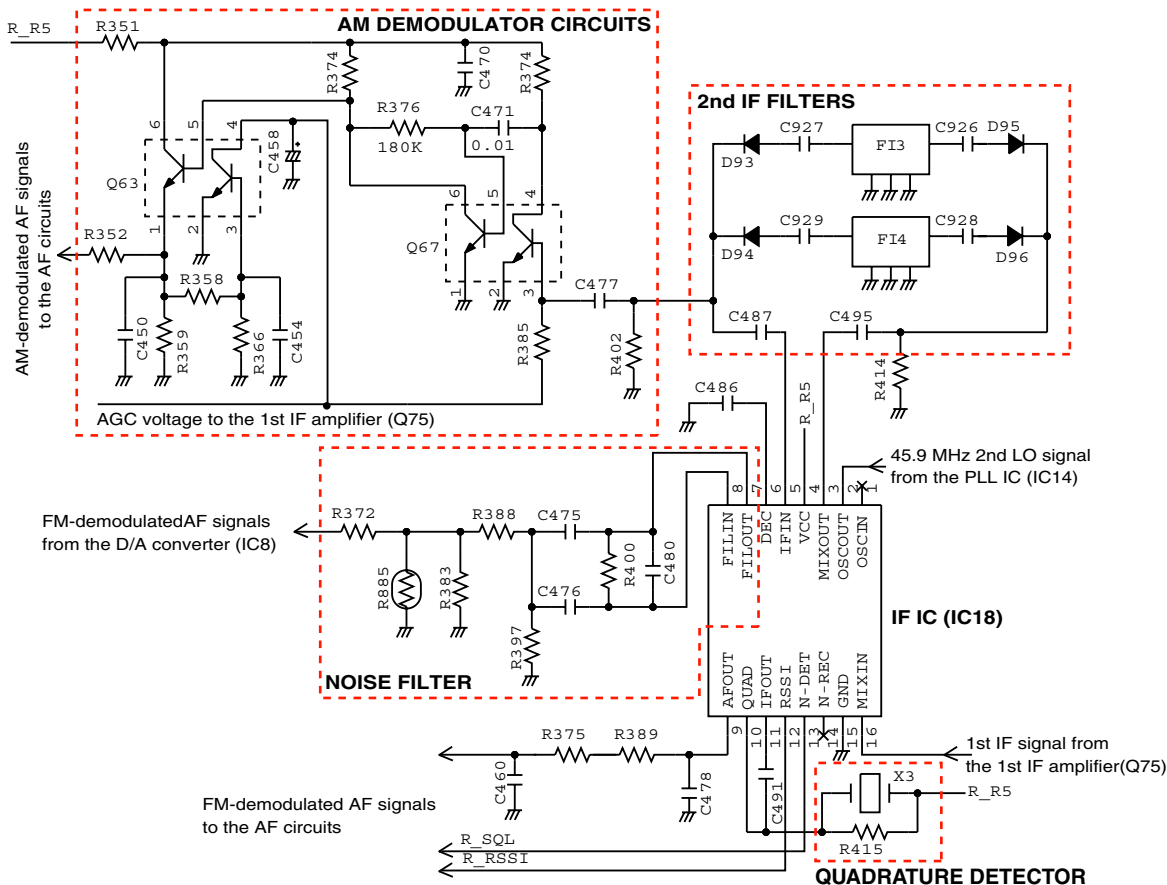
## • FM DEMODULATOR

The filtered 2nd IF signal from pin 5 is amplified at the limiter amplifier, and FM-demodulated at the quadrature detector circuit (X3). The demodulated AF signals are output from pin 9 and routed to the AF circuits via two AF switches (IC12 and IC16).

## • AM DEMODULATOR CIRCUITS

In the AM mode, the 2nd IF signal from the FI3 is applied to the AM-demodulator circuit (Q63, Q67). The demodulated AF signals are routed to the AF circuits via two AF switches (IC12 and IC16).

## • DEMODULATOR CIRCUITS (Right band)





**<OPERATION ON THE RIGHT BAND>**

The modulation signals are applied to the variable capacitor D87 of the left band VCO (Q73, D87, 91, 92) via the modulation selector (IC63) and modulation mute switch (Q64), and modulated. The modulated VCO output are amplified by the buffer (Q76) and LO amplifier (IC45), and applied to the transmit amplifiers as the TX signal, via the VCO switch (D102). The amplified LO signals are applied to the transmit amplifiers via the LO switch (D103), two HPFs (L124, C527, 532; L159, C533, 535) and attenuator (R43, 47, 57).

**TRANSMIT POWER AMPLIFIERS**

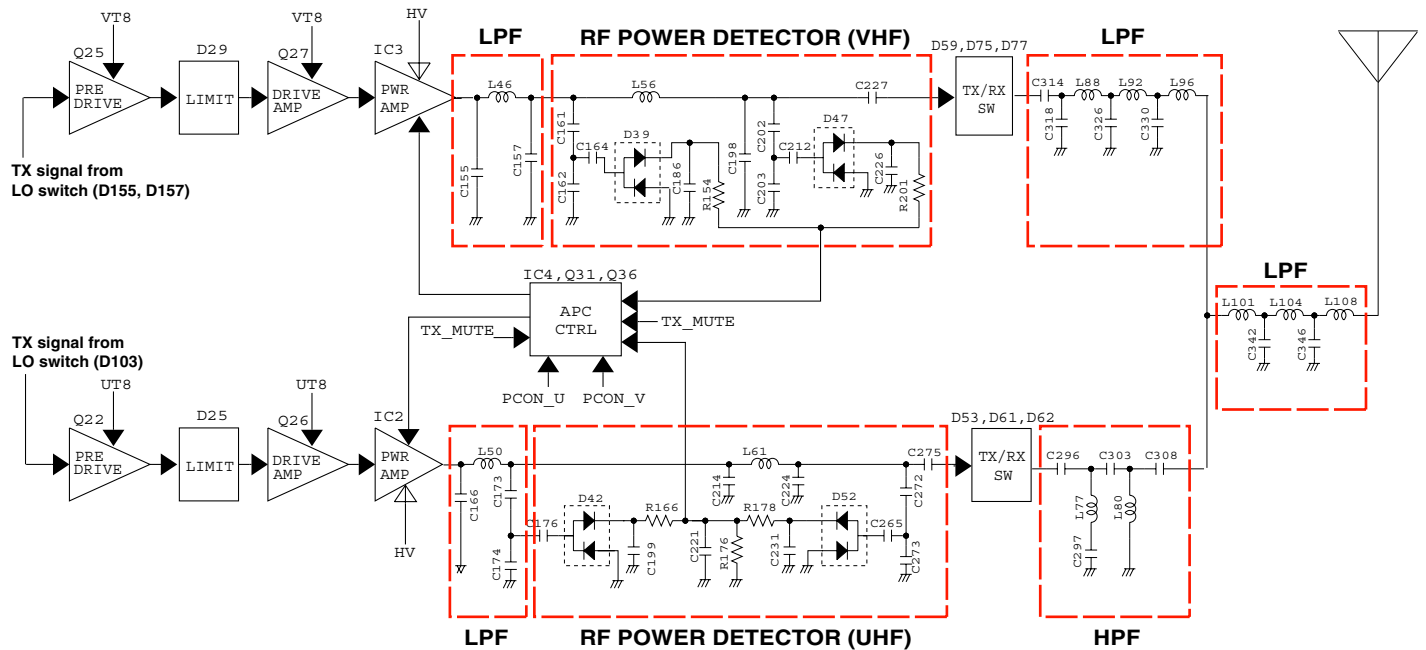
TX signal from the attenuator (R43, 47, 57) is amplified by pre-drive (Q22) and drive (Q26) amplifiers to obtain RF level for power module (IC2). The amplified TX signal is applied to the power amplifier which is a UHF band PA module composed by two power MOS-FETs. The power-amplified TX signal is passed through the LPF, power detector, antenna switch (D62) and LPF, before being applied to the antenna connector (CHASSIS; J1).

**APC CIRCUITS**

A portion of the TX signal from IC2 is rectified at the power detector (D42, 52), and converted into the DC voltage which is in proportion to the RF power, and applied to the operational amplifier (IC4, pin 2). IC4 is an APC amplifier for both of V/UHF bands. The TX power setting voltage "PCON\_U" from the D/A converter (IC1, pin 6) is applied to the pin 3 as a reference. IC4 is rolled as a differential amplifier which outputs voltage in inverse proportion to rectified one. When the TX power increased, the rectified voltage also increased, that causes the decrease of output voltage of differential amplifier. The decrease of output voltage of differential amplifier causes the drop of the gate voltage of IC2, Thus the TX power maintained to keep stable level.

TX muting is carried out by TX mute SW (Q36) controlled by "TX\_mute" signal. Applying "TX\_mute" signal to the base terminal of Q36 to turn it ON, 8 V DC appears on the pin 6 of IC4 and its output voltage downs to 0 V DC to inactivate IC3.

**• APC CIRCUITS**



## 4-3 FREQUENCY SYNTHESIZER

### VCOs

This transceiver has 3 VCOs; Left band VCO, Right band RX VCO and Right band TX/RX VCO.

#### LEFT BAND VCO (Q111, D145–147)

This VCO oscillates 1st LO signals for Left band RX and TX signal for VHF band.

##### <While receiving>

The VCO output signal is amplified by buffer (Q113) and LO amplifier (IC44), and applied to the LO filters according to the RX frequency.

##### • While Receiving 118–174 MHz signals

LO signals 135.575–255.575 MHz are applied to the divider (IC43) via LO switch (D150) and attenuator (R706, 710, 711), and divided into 271.15–511.15 MHz signals. The divided LO signals are buffer-amplified by Q116, and applied to the left band 1st mixer (IC19) via the LPF (L115, 156, C809, 812, 816) and another LO switch (D156).

##### • While Receiving 174–260 MHz signals

LO signals 141.15–221.145 MHz are passed through the LPF (L148, 152, C785, 789, 795, 804) via LO switches (D151, 153), and applied to the left band 1st mixer (IC19).

##### • While Receiving 375–550 MHz signals

LO signals 135.575–255.575 MHz are doubled to 271.15–511.15 MHz signals, by being passed through the HPF (L149, C787, 790, 791), LPF (L151, C794, 796, 799) and HPF (L153, C800, 807) via LO switches (D152, 154). The doubled LO signals are applied to the left band 1st mixer (IC19).

##### <While transmitting>

The VCO output signal is amplified by buffer (Q113) and LO amplifier (IC44), and applied to the transmit amplifiers via the LO switches (D155, 157), LPF (L157, C818, 820) and attenuator (R33, 37, 46).

#### RIGHT BAND RX VCO (Q72, D89, 90)

This VCO oscillates 1st LO signals for right band RX (118–174 MHz and 810–1000 MHz).

The VCO output signal is amplified by buffer (Q74) and applied to the LO amplifier (IC45) via VCO switch (D160), and applied to the LO filters according to the RX frequency.

##### • While Receiving 118–174 MHz signals

LO signals 164.35–220.35 MHz are passed through the LPF (L123, 125, C529, 534, 539) via LO switches (D107, 159), and applied to the right band 1st mixer (IC20).

##### • While Receiving 810–1000 MHz signals

LO signals 381.825–476.82 MHz<sup>\*1</sup> are applied to the LO amplifier (IC62) via LO switch (D101). The amplified LO signals are doubled to 763.65–953.64 MHz<sup>\*2</sup> signals by being passed through the HPF (L130, 133, C554, 558, 560), LPF (L151, C794, 796, 799) and HPF (L135, C563, 568).

The doubled LO signals are applied to the right band 1st mixer (IC20).

#### RIGHT BAND TX/RX VCO (Q73, D87, 91, 92)

This VCO oscillates 1st LO signals for right band RX (375–550 MHz).

##### <While receiving>

LO signals 353.65–523.17 MHz are passed through the RF mute switch (Q79) and LPF (L131, 134, C562) via LO switches (D104, 108), and applied to the right band 1st mixer (IC20).

##### <While transmitting>

The VCO output signal is amplified by buffer (Q76), and applied to the LO amplifier (IC45) via the VCO switch (D102). The amplified LO signals are applied to the transmit amplifiers via the LO switch (D103), two HPFs (L124, C527, 532; L159, C533, 535) and attenuator (R43, 47, 57).

### • VCO CONFIGURATION BY FREQUENCY

VCO		LEFT BAND VCO	RIGHT BAND RX VCO	RIGHT BAND TX/RX VCO
Components		(Q111, D145–147)	(Q72, D89, 90)	(Q73, D87, 91, 92)
Oscillating Frequency	RX	(118–174 MHz)	135.575–255.575 MHz	164.35–220.35 MHz
		(174–260 MHz)	141.15–221.145 MHz	381.825–476.82 MHz <sup>*1</sup>
		(375–550 MHz)	135.575–255.575 MHz	–
	TX	136–174 MHz	–	400–470 MHz

\*1: 810–1000 MHz for USA

\*2: 856.35–1046.34 MHz for USA

**PLL CIRCUITS**

The PLL circuit provides stable oscillation of the transmit frequency and receive 1st LO frequency. The PLL output frequency is controlled by the divided ratio (N-data) from the CPU.

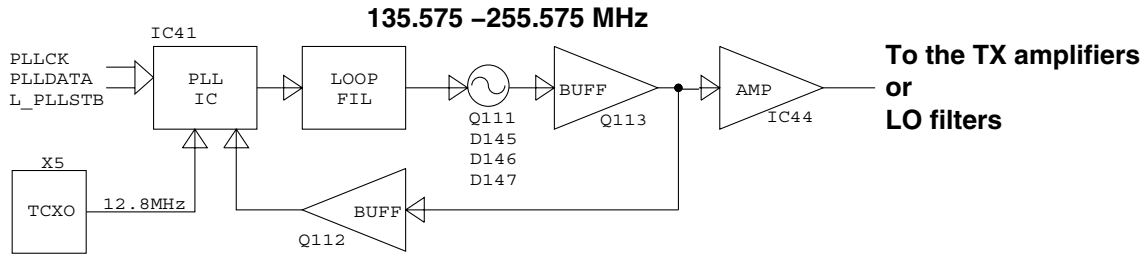
**LEFT BAND VCO LOOP**

A portion of VCO output signals from the buffer (Q113) are applied to the PLL IC (IC41) via another buffer (Q112). The applied signals are divided at the prescaler and programmable counter according to the control signals ("L\_PLLSTB," "PLLDATA" and "PLLCK") from the CPU. The divided signal is phase-compared with the 12.8 MHz reference frequency signal from the reference frequency oscillator (X5), at the phase detector.

The phase difference is output from pin 5 as a pulse type signal after being passed through the internal charge pump. The output signal is converted into the DC voltage (lock voltage) by passing through the loop filter (R694, 696–698, C760–762). The lock voltage is applied to the variable capacitors (D145 and D146), and locked to keep the VCO frequency constant.

If the oscillated signal drifts, its phase changes from that of the reference frequency, causing a lock voltage change to compensate for the drift in the VCO oscillating frequency.

**• LEFT BAND VCO LOOP**



**RIGHT BAND RX VCO LOOP**

A portion of VCO output signals from the buffer (Q74) are applied to the PLL IC (IC14) via the VCO switch (D160) and another buffer (Q112). The applied signals are divided at the prescaler and programmable counter according to the control signals ("R\_PLLSTB," "PLLDATA" and "PLLCK") from the CPU. The divided signal is phase-compared with the 15.3 MHz reference frequency signal from the reference frequency oscillator (X1), at the phase detector.

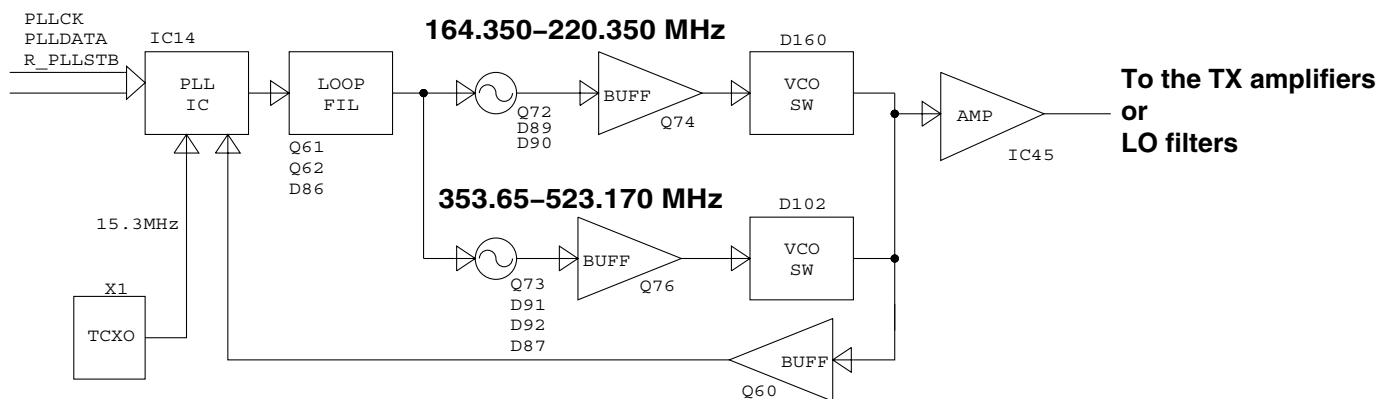
**RIGHT BAND TX/RX VCO**

A portion of VCO output signals from the buffer (Q76) are applied to the PLL IC (IC14) via the VCO switch (D102) and another buffer (Q60). The applied signals are divided at the prescaler and programmable counter according to the control signals ("R\_PLLSTB," "PLLDATA" and "PLLCK") from the CPU. The divided signal is phase-compared with the 15.3 MHz reference frequency signal from the reference frequency oscillator (X1), at the phase detector.

The phase difference is output from pin 5 as a pulse type signal after being passed through the internal charge pump. The output signal is converted into the DC voltage (lock voltage) by passing through the loop filter (Q61, 62, D86). The lock voltage is applied to the variable capacitors (D91, 92), and locked to keep the VCO frequency constant.

The phase difference is output from pin 5 as a pulse type signal after being passed through the internal charge pump. The output signal is converted into the DC voltage (lock voltage) by passing through the loop filter (Q61, 62, D86). The lock voltage is applied to the variable capacitors (D91, 92), and locked to keep the VCO frequency constant.

**• RIGHT BAND RX AND TX/RX VCO LOOP**





## 4-5 CPU PORT ALLOCATION

PIN No.	PORT NAME	DESCRIPTION	I/O
3	AN	Cut-off frequency shifting signal to the HPF (IC48).	O
4	DA_SEL	Cut-off frequency shifting signal to the HPF (IC48).	O
5	MM_MUTE	MIC mute signal to the MIC mute switch (IC30). "H"=MIC mute.	O
6	DCONT	ALC amplifier control signal tot the AF switches (IC29 and IC52). "H"=ALC amplifier ON.	O
7	R_WN_SEL	2nd IF filter (Right band; Wide/Narrow) toggling signal. "H"=Narrow. "L"=Wide.	O
11	MIC_SENC	Microphone sensitivity select signal. "H"=High sensitivity.	O
17	MOD_DA	Modulation line switching signal to the MOD selector (Left band; IC9). "H"=Modulation enable.	O
18	MODSEL	Modulation line switching signal to the MOD selector (Right band; IC63). "H"=Modulation enable.	O
21	R_PLLSTB	Strobe signal to the PLL IC (Right band; IC14).	O
22	L_PLLSTB	Strobe signal to the PLL IC (Left band; IC41).	O
23	L_AMC	AM-demodulator circuit (Left band) control signal. "H"=AM mode (AM-modulator circuit is activated).	O
24	DTCS_SEL	Tone filter switching signal to the LPF (Q100). "H"=DTCS mode. "L"=CTCSS mode.	O
25	L_R5C	RX circuits (Left band) control signal. "H"=RX circuits (Left band) is activated.	O
26	L_WN_SEL	2nd IF filter (Wide/Narrow) toggling signal.(Left band) "H"=Narrow. "L"=Wide."	O
27	UMMUTE	Modulation mute signal to the MOD mute switch (Right band; Q64). "H"=Modulation muted.	O
28	UTX_C	Transmitting control signal to the VT8 regulator (Q12, 15).	O
29	L_VCO_SHIFT	VCO oscillating frequency shift signal to the Left band VCO.	O
30	R_PLLSW	Lock-up time control signal to the loop filter (Right band). "H"=Fast lock-up time.	O
31	R_UNLOCK	PLL unlock signal from the PLL IC (Right band; IC14).	I
32	PLLCK	Clock signal to the PLL ICs (Right band; IC14, Left band; IC41). (Commonly used for both of the Left and Right bands.)	O
33	PLLDATA	Data to the PLL ICs (Right band; IC14, Left band; IC41). (Commonly used for both of Left and Right bands.)	O
34	L_UNLOCK	PLL unlock signal from the PLL IC (Left band; IC41).	I
35	VMMUTE	Modulation mute signal to the MOD mute switch (Left band; Q109). "H"=Modulation muted.	O
36	VTX_C	Transmitting control signal to the UT8 regulator (Q13, 17). "H"=While transmitting.	O
37	L_PLLSW	Lock-up time control signal to the loop filter (left band). "H"=Fast lock-up time.	O

PIN No.	PORT NAME	DESCRIPTION	I/O
38	R_UVCO_SEL	VCO power control signal to the VCO select switch (Right band UHF; Q65, 68). "L"=Right band TX/RX VCO is activated.	O
39	R_VVCO_SEL	VCO power control signal to the VCO select switch (Right band VHF; Q65, 68). "L"=Right band RX VCO is activated.	O
40	L_LO_SW	LO filter switching signal to the LO regulator (Q106).	O
42	R_DA_SEL	AF line switching signal to the AF switch (IC12).	O
42	R_AFFIL_SEL	Switching signal to the AF filter (Right band; Q48).	O
43	R_DET_MUTE	AF line switching signal to the AF switch (IC16). "H"=AF mute.	O
44	L_DA_SEL	AF line switching signal to the AF switch (IC11).	O
45	L_DET_MUTE	AF line switching signal to the AF switch (IC13). "H"=AF mute.	O
48	D5VC	Power control signal for the optional unit.	O
51	R_AF_MUTE	AF mute signal to the SP mute switch (Right band; Q101). "H"=AF mute.	O
52	L_AFFIL_SEL	Switching signal to the AF filter (Left band; Q47).	O
53	DA3STB	Strobe signal to the D/A converter.	O
53	DA2_STB	Strobe signal to the electric volume.	O
55	DTCS	DTCS signal.	O
56	DTMF	DTMF signal.	O
57	MIC_SEL	Connected microphone detect signal.	I
61	DTMSTB	Strobe signal to the DTMF decoder (IC56).	-
62	MICUD	[UP]/[DWN] key input.	I
63	R_RSLV	While receiving; inputs RSSI signal (IC18; Right band). While transmitting; inputs Lock Voltage from the PLL IC (IC14).	I
64	L_RSLV	While receiving; inputs RSSI signal from IF ICI (IC15; Left band). While transmitting; inputs Lock Voltage from the PLL IC (IC41).	I
65	IDET	Current level from the current detector (IC55, Q164).	I
66	R_WXALT	Demodulated Weather alert signal from the WX filter (Q47). [USA] only	I
68	R_DTCS_IN	Demodulated DTCS signals from the CTCSS filter (Q42).	I
69	L_WXALT	Demodulated Weather alert signal from the WX filter (Q48). [USA] only	I
70	L_DTCS_IN	Demodulated DTCS signals from the CTCSS filter (Q41).	I
71	TEMP	Transceiver's internal temperature from the thermal detector circuit (R509).	I
76	SCL	I/O port for clock signal to the EEPROM (IC22).	I/O
77	AF_VOL_CK	Serial clock signal to the electric volume IC.	O
78	AF_VOL_DATA	Data signal to the electric volume IC.	O
79	AF_VOL_STB	Latch enable signal to the electric volume IC.	O
80	AF_VOL_RES	Reset signal to the electric volume IC.	O
80	PWR	Power control signal to the PWR controller (Q82). "H"=While the power is ON.	O
82	SDA	Data signal to the EEPROM (IC22).	I/O

<b>PIN No.</b>	<b>PORT NAME</b>	<b>DESCRIPTION</b>	<b>I/O</b>
83	L_AF_MUTE	AF mute signal to the SP mute switch (Q102).	O
85	MIC_PTT	Input port for [PTT] key on the connected microphone.	I
100	RESET	Reset enable signal input.	I
101	L_SQL	Noise signal from the IF IC (Left band; IC15).	I
102	CL_SFT2	Clock frequency shifting signal.	O
105	R_SQL	Noise signal from the IF IC (Right band; IC18).	I
122	R_DATA	Data lines for the control unit.	I
123	TX_DATA	Data lines for the control unit.	O
127	TX232	Data bus for RS-232C communication.	O
128	RX232	Data bus for RS-232C communication.	I
129	DA_CK	Serial clock signal to the D/A converter.	O
130	DA_DATA	Serial data to the D/A converter.	O
134	DA_STB	Strobe signal to the D/A converter.	O
135	R_R5C	RX circuits (Right band) control signal.	O
136	R400_S	Power line control signal to the 375–550 MHz band RF circuit (Right band).	O
137	R_RX800	Power line control signal to the 810–1000 MHz band RF circuit (Right band).	O
138	R_AMC	AM-demodulator circuit (Right band) control signal.	O
143	DTMSD	Data to the DTMF decoder (IC56).	-
144	DTMCK	Clock signal to the DTMF decoder (IC56).	-



# SECTION 5 ADJUSTMENT PROCEDURE

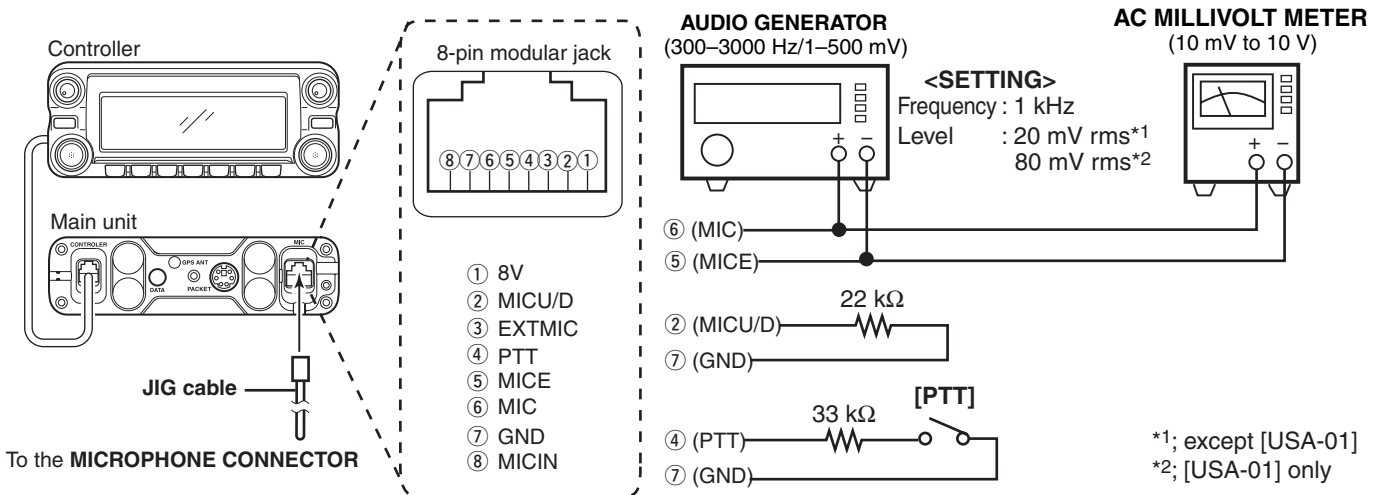
## 5-1 PREPARATION

### REQUIRED TEST EQUIPMENTS

When adjusting IC-2820H, following test equipments and JIG cable (modified 8-pin modular jack; see the illust below) are required.

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : More than 20 A	Audio generator	Frequency range : 300–3000 Hz Output level : 1–500 mV
RF power meter (terminated type)	Measuring range : 1–100 W Frequency range : 100–600 MHz Impedance : 50 Ω SWR : Less than 1.2 : 1	Standard signal generator (SSG)	Frequency range : 0.1–1 GHz Output level : 0.1 μV to 32 mV (–127 to –17 dBm)
Frequency counter	Frequency range : 0.1–600 MHz Frequency accuracy: ±1 ppm or better Sensitivity : 100 mV or better	AC millivoltmeter	Measuring range : 10 mV to 10 V
		Terminator	Impedance : 50 Ω Capacity : More than 100 W
Modulation Analyzer	Frequency range : 30–600 MHz Measuring range : DC to ±10 kHz	Attenuator	Power attenuation : 40 dB Capacity : More than 100 W

### JIG CABLE

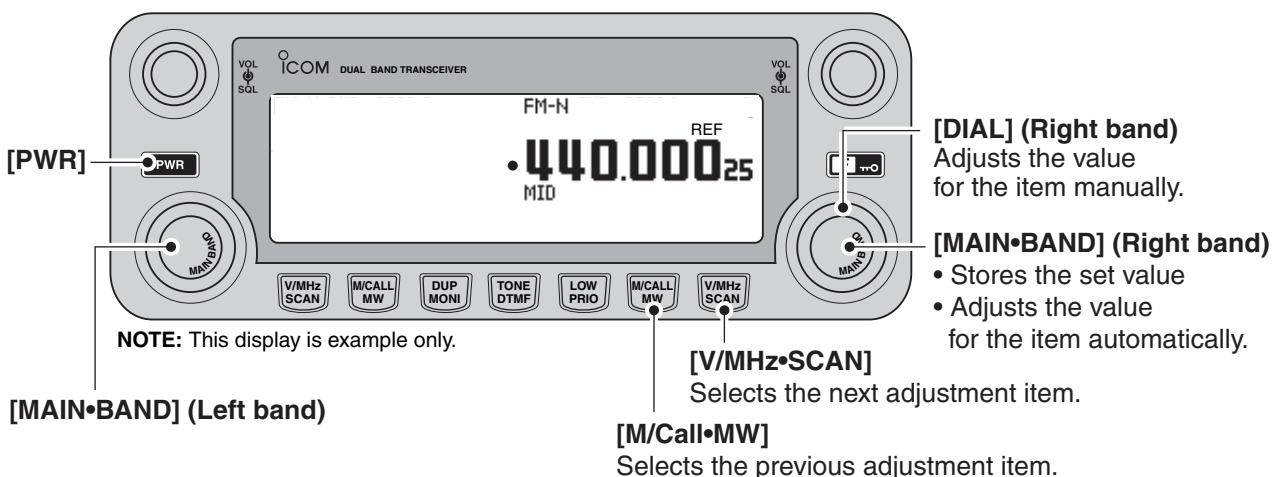


### ENTERING ADJUSTMENT MODE

- ① Connect the JIG cable to the **MICROPHONE CONNECTOR** (see the illust above).
- ② Push and hold the both of **[MAIN•BAND]** keys, then turn power ON.

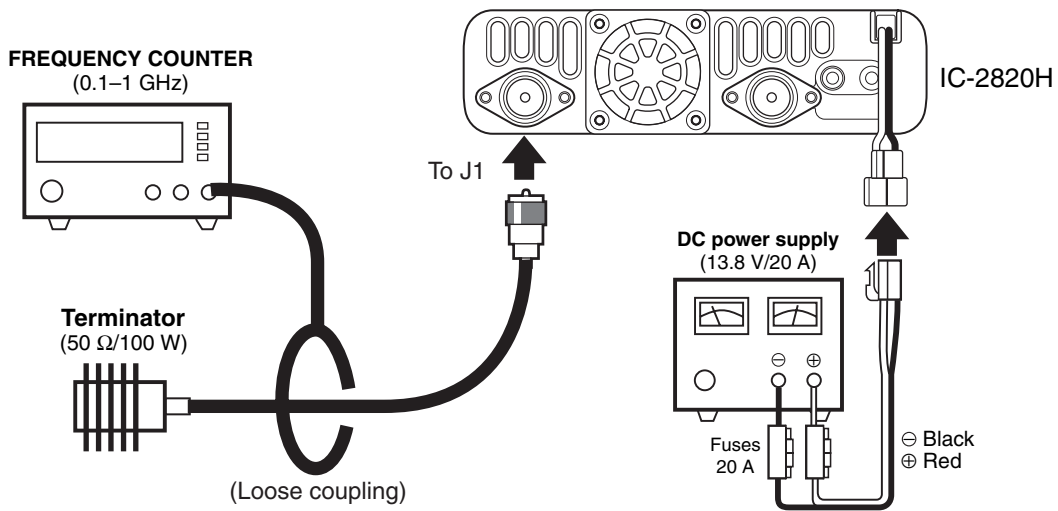
### KEY ASSIGNMENTS IN THE ADJUSTMENT MODE

Entering adjustment mode, the function display shows adjustment item and conditions as below.



## 5-2 FREQUENCY ADJUSTMENT

### • CONNECTIONS FOR FREQUENCY ADJUSTMENT

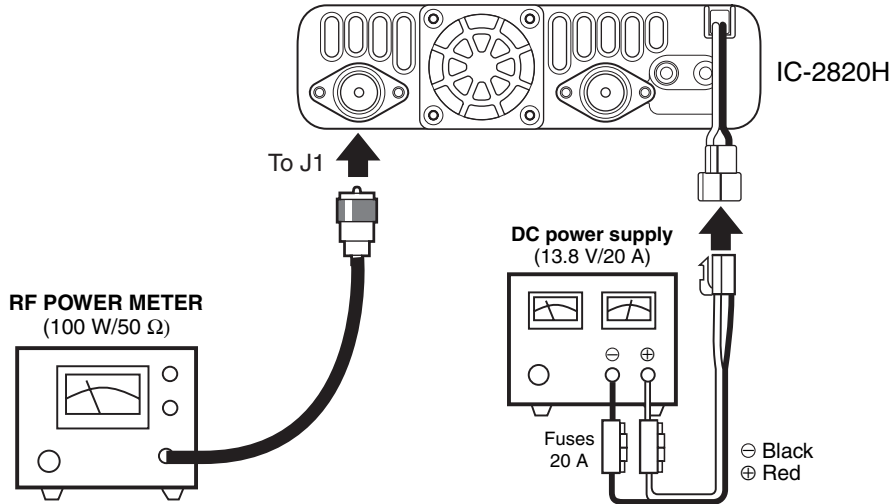


ADJUSTMENT		ADJUSTMENT CONDITIONS	OPERATION	VALUE
REFERENCE FREQUENCY (Left Band) [L REF]	1	<ul style="list-style-type: none"> <li>Connect a Terminator to the antenna connector (J1).</li> <li>Loosely couple a Frequency Counter to the antenna connector (J1).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the reference frequency, then push the right band's <b>[MAIN •BAND]</b> key.	146.000 MHz
(Right Band) [R REF]	2			435.000 MHz [others] 445.000 MHz [USA-01]

### 5-3 TRANSMIT ADJUSTMENTS

#### ■ TRANSMIT OUTPUT POWER ADJUSTMENT

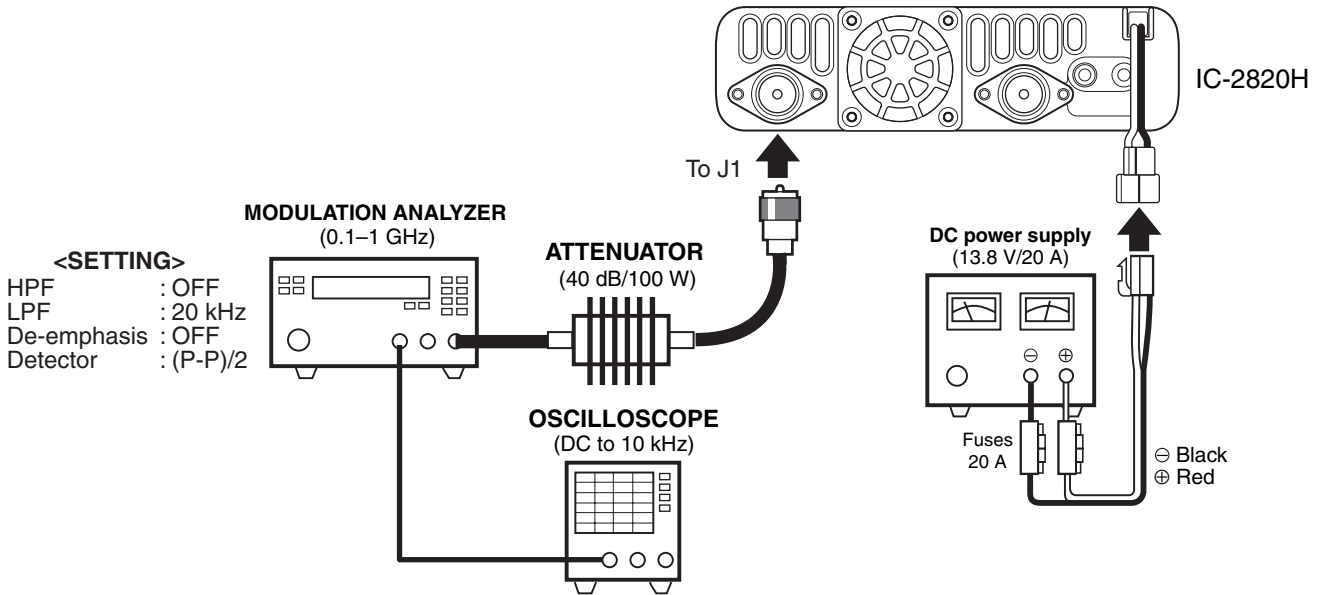
##### • CONNECTIONS FOR TX POWER ADJUSTMENT



ADJUSTMENT ITEM		ADJUSTMENT CONDITIONS		OPERATION	VALUE		
144 MHz BAND TRANSMIT OUTPUT POWER (HI POWER)	(Band Low) [L PHL]	1	<ul style="list-style-type: none"> <li>Connect an RF Power Meter to the antenna connector (J1).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the transmit output power, then push the right band's <b>[MAIN •BAND]</b> key during transmit.	50 W		
	(Band High) [L PHH]	2					
	(MID POWER)	(Band Low) [L PML]				3	15 W [others] 22 W [TPE-01]
	(Band High) [L PMH]	4					
	(LOW POWER)	(Band Low) [L PLL]				5	5 W
	(Band High) [L PLH]	6					
430 MHz BAND TRANSMIT OUTPUT POWER (HI POWER)	(Band Low) [R PHL]	1	<ul style="list-style-type: none"> <li>Connect an RF Power Meter to the antenna connector (J1).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the transmit output power, then push the right band's <b>[MAIN •BAND]</b> key during transmit.	50 W		
	(Band High) [R PHH]	2					
	(MID POWER)	(Band Low) [R PML]				3	15 W [others] 22 W [TPE-01]
	(Band High) [R PMH]	4					
	(LOW POWER)	(Band Low) [R PLL]				5	5 W
	(Band High) [R PHH]	6					

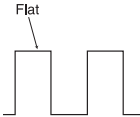
## ■ DEVIATION ADJUSTMENT

### • CONNECTION FOR MODULATION ADJUSTMENTS



ADJUSTMENT ITEM				ADJUSTMENT CONDITIONS	OPERATION	VALUE
144 MHz BAND BAND DEVIATION (Left Band)	(Band Low)	(FM) [L FMD]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Connect an Audio Generator to the JIG cable (See the page 5-1 for the connector and setting details).</li> <li>Transmitting</li> </ul>	Rotate the right band's [DIAL] to adjust the deviation, then push the right band's [MAIN•BAND] key during transmit.	±4.2 kHz
		(FM-N) [L FMD]	2			±2.1 kHz
	(Band Center)	(FM) [L FMD]	3			±4.2 kHz
		(FM-N) [L FMD]	4			±2.1 kHz
	(Band High)	(FM) [L FMD]	5			±4.2 kHz
		(FM-N) [L FMD]	6			±2.1 kHz
144 MHz BAND MODULATION BALANCE (Left Band)	(Band Low)	(FM) [L FMB]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Connect an oscilloscope to the detector terminal of the Modulation Analyzer.</li> <li>No audio signals are applied to the JIG cable (See the page 5-1).</li> <li>Transmitting</li> </ul>	Rotate the right band's [DIAL] to adjust the wave form, then push the right band's [MAIN•BAND] key during transmit.	(Square Wave form) 
		(FM-N) [L FMB]	2			
	(Band Center)	(FM) [L FMB]	3			
		(FM-N) [L FMB]	4			
	(Band High)	(FM) [L FMB]	5			
		(FM-N) [L FMB]	6			
144 MHz BAND DTCS MODULATION (Left Band)	(FM) [L MDT]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>No audio signals are applied to the JIG cable (See the page 5-1).</li> <li>Transmitting</li> </ul>	Rotate the right band's [DIAL] to adjust the deviation, then push the right band's [MAIN•BAND] key.	±0.8 kHz	
	(FM-N) [L MDT]	2				
144 MHz CTCSS MODULATION (Left Band)	(FM) [L MCT]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>No audio signals are applied to the JIG cable (See the page 5-1).</li> <li>Transmitting</li> </ul>	Rotate the right band's [DIAL] to adjust the deviation, then push the right band's [MAIN•BAND] key.	±0.75 kHz	
	(FM-N) [L MCT]	2				

## DEVIATION ADJUSTMENT (continued)

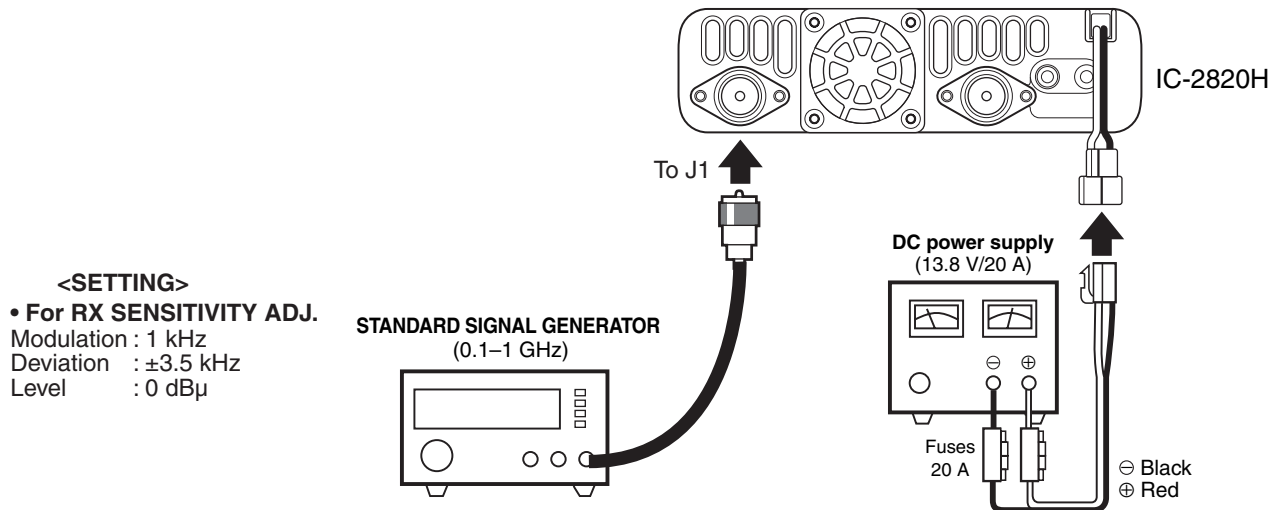
ADJUSTMENT ITEM			ADJUSTMENT CONDITIONS	OPERATION	VALUE	
430 MHz DEVIATION (Right Band)	(Band Low)	(FM) [R FMD]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Connect an Audio Generator to the JIG cable (See the page 5-1 for the connector and setting details).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the deviation, then push the right band's <b>[MAIN•BAND]</b> key during transmit.	±4.2 kHz
		(FM-N) [R FMD]	2			±2.1 kHz
	(Band Center)	(FM) [R FMD]	3			±4.2 kHz
		(FM-N) [R FMD]	4			±2.1 kHz
	(Band High)	(FM) [R FMD]	5			±4.2 kHz
		(FM-N) [R FMD]	6			±2.1 kHz
430 MHz MODULATION BALANCE (Right Band)	(Band Low)	(FM) [R FMB]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>No audio signals are applied to the JIG cable (See the page 5-1).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the wave form, then push the right band's <b>[MAIN•BAND]</b> key during transmit.	(Square Wave form) 
		(FM-N) [R FMB]	2			
	(Band Center)	(FM) [R FMB]	3			
		(FM-N) [R FMB]	4			
	(Band High)	(FM) [R FMB]	5			
		(FM-N) [R FMB]	6			
430 MHz DTCS MODULATION (Right Band)	(FM) [R MDT]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>No audio signals are applied to the JIG cable (See the page 5-1).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the deviation, then push the right band's <b>[MAIN•BAND]</b> key.	±0.8 kHz	
	(FM-N) [R MDT]	2				
430 MHz CTCSS MODULATION (Right Band)	(FM) [R MCT]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>No audio signals are applied to the JIG cable (See the page 5-1).</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the deviation, then push the right band's <b>[MAIN•BAND]</b> key.	±0.75 kHz	
	(FM-N) [R MCT]	2				
DV MODE DEVIATION* (144 MHz Band)	(Band Low)	[L MDS]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the deviation, then push the right band's <b>[MAIN•BAND]</b> key during transmit.	±0.9 kHz
	(Band Center)	[L MDS]	2			
	(Band High)	[L MDS]	3			
DV MODE MODULATION BALANCE* (144 MHz Band)	(Band Low)	[L MDB]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the wave form, then push the right band's <b>[MAIN•BAND]</b> key during transmit.	Minimum deviation
	(Band Center)	[L MDB]	2			
	(Band High)	[L MDB]	3			
DV MODE DEVIATION* (430 MHz Band)	(Band Low)	[R MDS]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the wave form, then push the right band's <b>[MAIN•BAND]</b> key during transmit.	±1 kHz
	(Band Center)	[R MDS]	2			
	(Band High)	[R MDS]	3			
DV MODE MODULATION BALANCE* (430 MHz Band)	(Band Low)	[R MDB]	1	<ul style="list-style-type: none"> <li>Connect a Modulation Analyzer to the antenna connector (J1) through an attenuator.</li> <li>Transmitting</li> </ul>	Rotate the right band's <b>[DIAL]</b> to adjust the wave form, then push the right band's <b>[MAIN•BAND]</b> key during transmit.	Minimum deviation
	(Band Center)	[R MDB]	2			
	(Band High)	[R MDB]	3			

\*; Optional UT-123 is required.

## 5-4 RECEIVE ADJUSTMENTS

### ■ SENSITIVITY ADJUSTMENT

#### • CONNECTION FOR RECEIVE SENSITIVITY AND RSSI ADJUSTMENTS



ADJUSTMENT ITEM	ADJUSTMENT CONDITIONS		OPERATION	VALUE
SENSITIVITY	Connect a Standard Signal Generator to the antenna connector (J1).			
118.020 MHz	(Left Band) [L LT1]	1	• Set the SSG as; Frequency : 118.020 MHz	(Automatic adjustment)
	(Right Band) [R LT1]	2		
127.020 MHz	(Left Band) [L MT1]	3	• Set the SSG as; Frequency : 127.020 MHz	
	(Right Band) [R MT1]	4		
135.980 MHz	(Left Band) [L HT1]	5	• Set the SSG as; Frequency : 135.980 MHz	
	(Right Band) [R HT1]	6		
136.020 MHz	(Left Band) [L LT2]	7	• Set the SSG as; Frequency : 136.020 MHz	
	(Right Band) [R LH2]	8		
146.020 MHz	(Left Band) [L MT2]	9	• Set the SSG as; Frequency : 146.020 MHz	
	(Right Band) [R MT2]	10		
173.980 MHz	(Left Band) [L HT2]	11	• Set the SSG as; Frequency : 173.980 MHz	
	(Right Band) [R HT2]	12		
174.020 MHz	(Left Band) [L LT3]	13	• Set the SSG as; Frequency : 174.020 MHz	
220.020 MHz	(Left Band) [L MT3]	14	• Set the SSG as; Frequency : 220.020 MHz	
250.020 MHz	(Left Band) [L HT3]	15	• Set the SSG as; Frequency : 250.020 MHz	
260.020 MHz	(Left Band) [L LT4]	16	• Set the SSG as; Frequency : 260.020 MHz	
310.020 MHz	(Left Band) [L MT4]	17	• Set the SSG as; Frequency : 310.020 MHz	
360.020 MHz	(Left Band) [L HT4]	18	• Set the SSG as; Frequency : 360.020 MHz	

■ SENSITIVITY ADJUSTMENT (continued)

ADJUSTMENT ITEM				ADJUSTMENT CONDITIONS	OPERATION	VALUE
SENSITIVITY	375.020 MHz	(Left Band) [L LT5]	19	• Set the SSG as; Frequency : 375.020 MHz	Push the right band's [MAIN•BAND] key.	(Automatic adjustment)
		(Right Band) [R LT5]	20			
	399.980 MHz	(Left Band) [L HT5]	21	• Set the SSG as; Frequency : 399.980 MHz		
		(Right Band) [R HT5]	22			
	400.020 MHz	(Left Band) [L LT6]	23	• Set the SSG as; Frequency : 400.020 MHz		
		(Right Band) [R LT6]	24			
	440.020 MHz	(Left Band) [L MT6]	25	• Set the SSG as; Frequency : 440.020 MHz		
		(Right Band) [R MT6]	26			
	449.980 MHz	(Left Band) [L HT6]	27	• Set the SSG as; Frequency : 449.980 MHz		
		(Right Band) [R HT6]	28			
	450.020 MHz	(Left Band) [L LT7]	29	• Set the SSG as; Frequency : 450.020 MHz		
		(Right Band) [R LT7]	30			
	500.020 MHz	(Left Band) [L MT7]	31	• Set the SSG as; Frequency : 500.020 MHz		
		(Right Band) [R MT7]	32			
	549.980 MHz	(Left Band) [L HT7]	33	• Set the SSG as; Frequency : 549.980 MHz		
		(Right Band) [R HT7]	34			

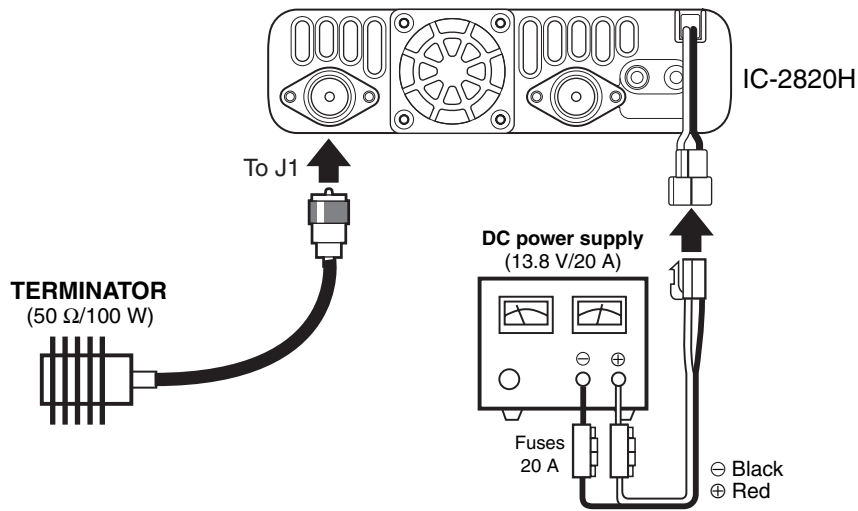
## ■ S-METER ADJUSTMENT

ADJUSTMENT ITEM		ADJUSTMENT CONDITIONS		OPERATION	VALUE	
S-METER	Connect a Standard Signal Generator to the antenna connector (J1).					
	127.020 MHz (S3 level)	(Left Band) [L S31]	1	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 127.020 MHz Level : -1 dBμ</li> </ul>	Push the right band's [MAIN•BAND] key.	(Automatic adjustment)
		(Right Band) [R S31]	2			
	(Full scale)	(Left Band) [L SF1]	3	<ul style="list-style-type: none"> <li>Set the SSG as; Level : +15 dBμ</li> </ul>		
		(Right Band) [R SF1]	4			
	146.020 MHz (S3 level)	(Left Band) [L S32]	5	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 146.020 MHz Level : -1 dBμ</li> </ul>		
		(Right Band) [R S32]	6			
	(Full scale)	(Left Band) [L SF2]	7	<ul style="list-style-type: none"> <li>Set the SSG as; Level : +15 dBμ</li> </ul>		
		(Right Band) [R SF2]	8			
	220.020 MHz (S3 level)	(Left Band) [L S33]	9	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 220.020 MHz Level : -1 dBμ</li> </ul>		
		(Full scale)	(Left Band) [L SF3]			
	300.020 MHz (S3 level)	(Left Band) [L S34]	11	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 300.020 MHz Level : -1 dBμ</li> </ul>		
		(Full scale)	(Left Band) [L SF4]			
	387.020 MHz (S3 level)	(Left Band) [L S35]	13	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 387.020 MHz Level : -1 dBμ</li> </ul>		
		(Right Band) [R S35]	14			
	(Full scale)	(Left Band) [L SF5]	15	<ul style="list-style-type: none"> <li>Set the SSG as; Level : +15 dBμ</li> </ul>		
		(Right Band) [R SF5]	16			
	435.020 MHz [others] 445.020 MHz [USA-01] (S3 level)	(Left Band) [L S36]	17	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 435.020 MHz [others] 445.020 MHz [USA-01] Level : -1 dBμ</li> </ul>		
		(Right Band) [R S36]	18			
	(Full scale)	(Left Band) [L SF6]	19	<ul style="list-style-type: none"> <li>Set the SSG as; Level : +15 dBμ</li> </ul>		
		(Right Band) [R SF6]	20			
	500.020 MHz (S3 level)	(Left Band) [L S37]	21	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 500.020 MHz Level : -1 dBμ</li> </ul>		
		(Right Band) [R S37]	22			
	(Full scale)	(Left Band) [L SF7]	23	<ul style="list-style-type: none"> <li>Set the SSG as; Level : +15 dBμ</li> </ul>		
		(Right Band) [R SF7]	24			
	910.020 MHz (S3 level)	(Left Band) [R S38]	25	<ul style="list-style-type: none"> <li>Set the SSG as; Frequency : 910.020 MHz Level : -1 dBμ</li> </ul>		
(Full scale)		(Right Band) [R SF8]	26			



## ■ SQUELCH ADJUSTMENT

### • CONNECTION FOR SQUELCH ADJUSTMENT



ADJUSTMENT ITEM		OPERATION		VALUE	
SQUELCH	Connect a Terminator (50 Ω) to the antenna connector (J1).				
	127.020 MHz	(FM) [L SQ1]	1	Push the right band's <b>[MAIN•BAND]</b> key.	(Automatic adjustment)
		(FM) [R SQ1]	2		
		(FM-N) [L SQ1]	3		
		(FM-N) [R SQ1]	4		
	146.020 MHz	(FM) [L SQ2]	5		
		(FM) [R SQ2]	6		
		(FM-N) [L SQ2]	7		
		(FM-N) [R SQ2]	8		
	220.020 MHz	(FM) [L SQ3]	9		
		(FM-N) [L SQ3]	10		
	300.020 MHz	(FM) [L SQ4]	11		
		(FM-N) [L SQ4]	12		
	387.020 MHz	(FM) [L SQ5]	13		
		(FM) [R SQ5]	14		
		(FM-N) [L SQ5]	15		
		(FM-N) [R SQ5]	16		
	440.020 MHz	(FM) [L SQ6]	17		
		(FM) [R SQ6]	18		
		(FM-N) [L SQ6]	19		
(FM-N) [R SQ6]		20			

# SECTION 6

# PARTS LIST

## [CONTROL UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC3	1180000421	S.IC TA78L05F (TE12R,F)	B	29.7/14.1
IC6	1180002371	S.REG R1111N321B-TR-F	B	42.4/18.8
IC9	1110005991	S.IC S-80945CNMC-G9F-T2G	B	35.8/18.5
IC10	1110006380	S.IC LM2904PWR	B	111.3/23.3
IC12	1130003831	S.IC TC7S04F (TE85R,F)	B	32.2/23.2
IC13	1140014061	S.IC M30620FCPCGP	B	70.4/20.8
IC14	1130007111	S.IC TC7W04FU (TE12L,F)	B	60.3/40.1
Q1	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	116.5/13.1
Q3	1520000201	S.TR 2SB798-T2-AZ DK	B	120.6/16.8
Q14	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	98.2/9.9
Q15	1510000771	S.TR 2SA1586-GR (TE85R,F)	B	98.2/14
Q16	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	43/47.5
Q17	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	39.1/47.5
Q18	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	55.4/47.5
Q19	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	51.5/47.5
Q20	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	67.8/47.5
Q21	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	63.9/47.5
Q22	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	80.2/47.5
Q23	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	76.3/47.5
Q24	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	92.6/47.5
Q25	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	88.7/47.5
Q26	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	105/47.5
Q27	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	101.1/47.5
Q28	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	117.4/47.5
Q29	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	113.5/47.5
Q31	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	35.4/21.5
D4	1790001140	S.ZEN MA8039-L (TX)	B	40.2/23.6
D8	1750000940	S.DIO ISS400 TE61	B	37/27.1
D9	1750000940	S.DIO ISS400 TE61	B	35.6/25.4
D10	1750000940	S.DIO ISS400 TE61	B	27.9/24.9
D11	1750000940	S.DIO ISS400 TE61	B	27.9/21.7
D12	1790001170	S.ZEN MA8068-M (TX)	B	120.5/12.5
D20	1730002670	S.ZEN MA8130-M (TX)	B	98.1/23.8
D21	1790001561	S.DIO 1SS372 (TE85R,F)	B	63.4/39.7
D22	1790001561	S.DIO 1SS372 (TE85R,F)	B	65.9/39.7
D23	1790001561	S.DIO 1SS372 (TE85R,F)	B	68.4/39.7
D24	1790001561	S.DIO 1SS372 (TE85R,F)	B	67.7/35.1
X1	6050012500	S.XTL CR-839 (FTX12.288M16SM)	B	54.6/12.5
L1	6200003640	S.COL MLF1608E 100K-T	B	59.5/45.6
R2	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	27.5/35.1
R4	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	116.3/35.3
R6	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	25.1/35.1
R8	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	118.7/35.3
R13	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	110.5/14.3
R14	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	14.6/32.9
R21	7030003480	S.RES ERJ3GEYJ 222 V (2.2 k)	B	113.4/14.3
R22	7030005170	S.RES ERJ2GEJ 474 X (470 k)	B	118.1/19.8
R24	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	25.5/24.7
R25	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	25.8/22.5
R41	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	58.4/8.6
R72	7410001220	S.ARY EXB28V103JX	B	53.2/18.7
R76	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	96/10.6
R77	7030005170	S.RES ERJ2GEJ 474 X (470 k)	B	98.2/11.6
R78	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	16.1/32.4
R83	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	30.7/18.6
R122	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	64.2/10.4
R123	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	63.3/10.4
R125	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	73.6/9.4
R126	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	72.7/9.4
R127	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	71.8/9.4
R128	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	68.7/8.8
R129	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	67.8/8.8
R130	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	66.9/7.5
R131	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	66.7/7.5
R132	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	65.1/8.8
R133	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	43.5/45.4
R134	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	39.6/45.4
R135	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	42.3/44.9
R136	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	38.4/44.9
R137	7030003390	S.RES ERJ3GEYJ 391 V (390)	B	114.5/8.4
R138	7030005010	S.RES ERJ2GEJ 681 X (680)	B	76.1/6.7
R139	7030005010	S.RES ERJ2GEJ 681 X (680)	B	48.9/8.1
R140	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	55.9/45.4
R141	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	52/45.4
R142	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	54.7/44.9
R143	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	50.8/44.9
R144	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	68.3/45.4
R145	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	64.4/45.4
R146	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	67.1/44.9
R147	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	63.2/44.9
R148	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	80.7/45.4
R149	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	76.8/45.4
R150	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	79.5/44.9
R151	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	75.6/44.9
R152	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	93.1/45.4
R153	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	89.2/45.4
R154	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	91.9/44.9
R155	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	88/44.9

## [CONTROL UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R156	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	105.5/45.4
R157	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	101.6/45.4
R158	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	104.3/44.9
R159	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	100.4/44.9
R160	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	117.9/45.4
R161	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	114/45.4
R162	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	116.7/44.9
R163	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	112.8/44.9
R168	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	34.7/23.7
R169	7030008290	S.RES ERJ2GEJ 183 X (18 k)	B	24/24.3
R170	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	101.5/20.6
R171	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	111.9/18.4
R172	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	111.4/16.6
R173	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	111.4/28.3
R174	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	111/30
R175	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	101.5/21.8
R176	7030004980	S.RES ERJ2GEJ 101 X (100)	B	115.7/40.6
R177	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	100/11.2
R178	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	98.2/8.1
R179	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	37.8/22
R180	7030005600	S.RES ERJ2GEJ 273 X (27 k)	B	36.5/23.3
R187	7030010040	S.RES ERJ2GEJ-JPW	B	63.2/13
R188	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	141.3/22.1
R189	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	9.8/30.8
R190	7410001130	S.ARY EXB28V102JX	B	80.2/25.3
R191	7410001130	S.ARY EXB28V102JX	B	82.2/18.5
R192	7410001130	S.ARY EXB28V102JX	B	63.5/30.2
R195	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	78/27.5
R196	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	62.9/14.9
R198	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	58.1/23
R199	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	58/25
R200	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	58/25.9
R201	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	58.3/26.8
R202	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	58.3/27.7
R203	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	60.9/27.3
R204	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	60.9/25.5
R205	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	61.3/30.6
R206	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	62.8/28.4
R207	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	92.2/12.6
R208	7410001140	S.ARY EXB28V104JX	B	98.6/26.8
R209	7410001140	S.ARY EXB28V104JX	B	101/28.9
R210	7410001140	S.ARY EXB28V104JX	B	81.7/16
R211	7410001140	S.ARY EXB28V104JX	B	81.4/13.3
R212	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	59.3/29.1
R213	7030010040	S.RES ERJ2GEJ-JPW	B	65.4/29.5
R216	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	54.9/26.7
R218	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	68.4/32.9
R219	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	59/43.4
R220	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	56.3/24.7
C1	4030016930	S.CER ECJ0EB1A104K	B	27.9/36.9
C2	4030016930	S.CER ECJ0EB1A104K	B	115.7/36.9
C3	4030016930	S.CER ECJ0EB1A104K	B	25.6/36.9
C4	4030016930	S.CER ECJ0EB1A104K	B	118.2/36.9
C5	4030017430	S.CER ECJ0EC1H101J	B	108.3/14.3
C7	4030017420	S.CER ECJ0EC1H470J	B	22.8/24.3
C8	4510008540	S.ELE EEE1CA100SR	B	111/10.7
C10	4030017420	S.CER ECJ0EC1H470J	B	24.2/22
C16	4030018910	S.CER C1608 JB 0J 475K-T	B	75/10.7
C24	4510008500	S.ELE EEE1CA101WP	B	38.5/11.7
C25	4030016790	S.CER ECJ0EB1C103K	B	28.4/10.6
C26	4030017040	S.CER ECJ0EB1A333K	B	38.6/18
C27	4030017460	S.CER ECJ0EB1E102K	B	28.4/17.6
C28	4510008800	S.ELE EEE1EA100SR	B	22.3/17
C29	4030017460	S.CER ECJ0EB1E102K	B	18.2/17.8
C30	4030017420	S.CER ECJ0EC1H470J	B	15.6/30.1
C31	4030017420	S.CER ECJ0EC1H470J	B	15.6/27.8
C34	4030016790	S.CER ECJ0EB1C103K	B	76.2/29.2
C42	4030017460	S.CER ECJ0EB1E102K	B	58.3/16.1
C43	4030017460	S.CER ECJ0EB1E102K	B	59.8/15.7
C44	4030017460	S.CER ECJ0EB1E102K	B	55.3/16.1
C45	4030017460	S.CER ECJ0EB1E102K	B	56.7/15.7
C46	4030016790	S.CER ECJ0EB1C103K	B	18.4/10.5
C47	4030016790	S.CER ECJ0EB1C103K	B	123.9/12.3
C48	4030016930	S.CER ECJ0EB1A104K	B	100.2/14.4
C50	4030016790	S.CER ECJ0EB1C103K	B	40.7/25.4
C51	4030016790	S.CER ECJ0EB1C103K	B	61.1/14.5
C54	4510008660	S.ELE EEE0JA220SR	B	48.5/18.9
C55	4510008660	S.ELE EEE0JA220SR	B	104.3/12.2

[CONTROL UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C87	4030016790	S.CER ECJ0EB1C103K	B	116.1/25.4
C95	4550006840	S.TAN TEESVA 1E 225M8R	B	52.3/24.5
C101	4550006840	S.TAN TEESVA 1E 225M8R	B	93/25.2
C102	4550006840	S.TAN TEESVA 1E 225M8R	B	88.3/25.2
C104	4030016790	S.CER ECJ0EB1C103K	B	118.1/21
C105	4030017460	S.CER ECJ0EB1E102K	B	33.4/19
C106	4030016930	S.CER ECJ0EB1A104K	B	76.2/28.3
C107	4030016930	S.CER ECJ0EB1A104K	B	62/14.5
C108	4030016790	S.CER ECJ0EB1C103K	B	60.9/28.5
C109	4030017660	S.CER ECJ0EC1H330J	B	61.4/8.3
C110	4030017660	S.CER ECJ0EC1H330J	B	61.4/9.2
C111	4550006840	S.TAN TEESVA 1E 225M8R	B	85.7/25.2
C113	4030017330	S.CER ECJ0EF1C104Z	B	63.4/41.5
C114	4030017330	S.CER ECJ0EF1C104Z	B	65.9/41.5
C115	4030017330	S.CER ECJ0EF1C104Z	B	68.4/41.5
C116	4030017330	S.CER ECJ0EF1C104Z	B	69.2/37.2
C117	4030017330	S.CER ECJ0EF1C104Z	B	62.5/37.8
C118	4030017330	S.CER ECJ0EF1C104Z	B	64.7/37.8
C119	4030017330	S.CER ECJ0EF1C104Z	B	68/37.8
C120	4030017330	S.CER ECJ0EF1C104Z	B	66/36.6
C121	4030017490	S.CER C1608 JB 1A 105K-T	B	59.5/44.4
C122	4030017490	S.CER C1608 JB 1A 105K-T	B	61.3/44.1
J3	6510025760	S.CNR B5B-ZR-SM4-TF (LF) (SN)	B	119.6/29.1
J4	6510025760	S.CNR B5B-ZR-SM4-TF (LF) (SN)	B	24.6/29.1
J5	6510025730	CNR HJC0187-010024		
J7	6510025830	S.CNR 04-6240-034-001-800/+	B	92.9/34.6
J8	6510025830	S.CNR 04-6240-034-001-800/+	B	48.1/34.6
DS1	5030003040	LCD M6-0103TRM-5		
DS21	5040002930	S.LED SML-512MMW T86	T	33/6.7
DS22	5040002930	S.LED SML-512MMW T86	T	137.1/30
DS23	5040002930	S.LED SML-512MMW T86	T	137.1/23.4
DS24	5040002930	S.LED SML-512MMW T86	T	59/6.7
DS25	5040002930	S.LED SML-512MMW T86	T	72/6.7
DS26	5040002930	S.LED SML-512MMW T86	T	46/6.7
DS27	5040002930	S.LED SML-512MMW T86	T	85/6.7
DS28	5040002930	S.LED SML-512MMW T86	T	98/6.7
DS29	5040002930	S.LED SML-512MMW T86	T	111/6.7
DS31	5040003260	S.LED FAMG1211F-TR	T	34.8/48
DS32	5040003260	S.LED FAMG1211F-TR	T	47.2/48
DS33	5040003260	S.LED FAMG1211F-TR	T	59.6/48
DS34	5040003260	S.LED FAMG1211F-TR	T	72/48
DS35	5040003260	S.LED FAMG1211F-TR	T	84.4/48
DS36	5040003260	S.LED FAMG1211F-TR	T	96.8/48
DS37	5040003260	S.LED FAMG1211F-TR	T	109.2/48
DS38	5040002930	S.LED SML-512MMW T86	T	6.9/23.4
DS39	5040002930	S.LED SML-512MMW T86	T	6.9/30
S5	2260001890	S.SW SKQDPA	T	33/3.2
S6	2260001890	S.SW SKQDPA	T	46/3.2
S7	2260001890	S.SW SKQDPA	T	98/3.2
S8	2260001890	S.SW SKQDPA	T	111/3.2
S10	2260001890	S.SW SKQDPA	T	137.1/26.7
S11	2260001890	S.SW SKQDPA	T	59/3.2
S12	2260001890	S.SW SKQDPA	T	72/3.2
S13	2260001890	S.SW SKQDPA	T	85/3.2
S14	2260001890	S.SW SKQDPA	T	6.9/26.7
S15	2250000570	ECR SW-169 (EC09E1524405)		
S16	2250000570	ECR SW-169 (EC09E1524405)		
EP9	6910012350	S.BEA MMZ1608Y 102BT	B	16/17.3
EP10	6910012350	S.BEA MMZ1608Y 102BT	B	15.3/26.6
EP11	6910012350	S.BEA MMZ1608Y 102BT	B	15.3/29
EP12	6910012350	S.BEA MMZ1608Y 102BT	B	15.3/31.3

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1110004310	S.IC M62352GP 75EC	T	25/108.5
IC2	1150002121	IC S-AU82L (I,Q)		
IC3	1150002161	IC S-AV32 (I2 Q)		
IC4	1110004050	S.IC NJM3404AV-TE1-#FMZB	B	39.8/107.5
IC8	1190000350	S.IC M62363FP-650C	T	52.5/24.3
IC9	1130007021	S.IC TC7S66FU (TE85L,F)	B	73.8/31.2
IC11	1130008511	S.IC TC7W53FU (TE12L,F)	T	107.5/88.7
IC12	1130008511	S.IC TC7W53FU (TE12L,F)	T	101.2/88.9
IC13	1130008511	S.IC TC7W53FU (TE12L,F)	B	58/39.7
IC14	1140005991	S.IC MB15A02PFV1-G-BND-ERE1	T	25.3/47.3
IC15	1110003201	S.IC TA31136FNG (EL)	B	57.3/64.1
IC16	1130008511	S.IC TC7W53FU (TE12L,F)	B	12.4/39
IC17	1130007021	S.IC TC7S66FU (TE85L,F)	T	28.5/39.9
IC18	1110003201	S.IC TA31136FNG (EL)	B	11.8/63.3
IC19	1190002051	S.IC SPM5001-TL-E	T	64.3/90.3
IC20	1190002051	S.IC SPM5001-TL-E	T	14.9/90.5
IC21	1180001071	S.IC TA7805F (TE16L,Q)	B	107.1/136
IC22	1140012950	S.IC 24LC512T-I/SM	B	112.6/98.2
IC23	1110005991	S.IC S-80945CNMC-G9F-T2G	T	121/74.5
IC24	1180001251	S.IC TA7808F (TE16L,Q)	B	100.1/136
IC25	1140014550	S.IC HD64F2506RFC26DV	B	114.5/73.1
IC26	1110006490	S.IC LMV321IDCKR	T	116/65.9
IC28	1130007371	S.IC TA75S558F (TE85L,F)	T	22.1/27
IC29	1130008511	S.IC TC7W53FU (TE12L,F)	B	28.6/27
IC30	1130011770	S.IC CD4066BPWWR	T	31.8/24.7
IC31	1130011770	S.IC CD4066BPWWR	T	70/6.3
IC32	1110005310	S.IC AN6123MS	B	34.3/21.8
IC33	1130011860	S.IC SM6451BT-G-E2	T	110.3/105.3
IC34	1130008511	S.IC TC7W53FU (TE12L,F)	T	101.6/34.1
IC35	1130011770	S.IC CD4066BPWWR	B	70/8.2
IC36	1130013010	S.IC SN74AHC1G08DCK3	B	120.3/104.3
IC37	1130008511	S.IC TC7W53FU (TE12L,F)	B	114.2/30.2
IC38	1110002541	IC LA4445-E		
IC41	1140005991	S.IC MB15A02PFV1-G-BND-ERE1	T	69.9/47.3
IC42	1130007021	S.IC TC7S66FU (TE85L,F)	T	74.8/37.5
IC43	1110004460	S.IC uPB1509GV-E1	T	77.6/57.8
IC44	1110006870	S.IC uPC2709TB-E3	T	90.2/57
IC45	1110006870	S.IC uPC2709TB-E3	T	42.4/56.2
IC46	1120003020	S.IC MAX3221PWR	T	94.9/9.9
IC48	1110006350	S.IC LM2902PWR	T	65.8/18
IC49	1110006740	S.IC LMV358IPWR	B	104.7/32.5
IC50	1110006490	S.IC LMV321IDCKR	T	100.1/28.3
IC51	1130008511	S.IC TC7W53FU (TE12L,F)	T	67.9/22.8
IC52	1130008511	S.IC TC7W53FU (TE12L,F)	B	35.1/27
IC53	1110006490	S.IC LMV321IDCKR	B	58.1/26.9
IC54	1110004310	S.IC M62352GP 75EC	T	96.5/96.9
IC55	1190002500	S.IC ZXCT1022E5TA	T	111.9/122.6
IC56	1130012960	S.IC BU8872FS-E2	B	119.3/53.4
IC57	1130008511	S.IC TC7W53FU (TE12L,F)	T	108.4/54.7
IC58	1130008511	S.IC TC7W53FU (TE12L,F)	T	115.7/54
IC59	1130004201	S.IC TC4S66F (TE85R,F)	T	111.8/100.7
IC60	1130008511	S.IC TC7W53FU (TE12L,F)	B	65/34.4
IC61	1130008511	S.IC TC7W53FU (TE12L,F)	B	21.4/33.8
IC62	1110006870	S.IC uPC2709TB-E3	T	32.7/59.8
IC63	1130007021	S.IC TC7S66FU (TE85L,F)	B	47.1/32.4
Q1	1590001650	S.TR XP4601 (TX)	B	100.8/99.4
Q2	1590001650	S.TR XP4601 (TX)	T	7.1/117
Q3	1590003240	S.TR UNR9114J-(TX)	B	89.2/102.2
Q4	1590003240	S.TR UNR9114J-(TX)	T	23.6/103.1
Q5	1590003240	S.TR UNR9114J-(TX)	B	89.1/100.1
Q6	1590003240	S.TR UNR9114J-(TX)	B	89.5/104.2
Q7	1590003240	S.TR UNR9114J-(TX)	B	88.6/108.2
Q8	1590003240	S.TR UNR9114J-(TX)	B	99.9/94.5
Q9	1590003240	S.TR UNR9114J-(TX)	T	25.7/103.1
Q10	1590003240	S.TR UNR9114J-(TX)	B	89.6/106.2
Q11	1590003240	S.TR UNR9114J-(TX)	T	6/121.5
Q12	1590003290	S.TR UNR9213J-(TX)	T	88.4/75
Q13	1590003290	S.TR UNR9213J-(TX)	T	46.5/81.3
Q14	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	20.9/127.8
Q15	1510000581	S.TR 2SA1362-GR (TE85R,F)	T	83.9/76.2
Q16	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	103.2/104.4
Q17	1510000581	S.TR 2SA1362-GR (TE85R,F)	T	46.1/76.2
Q18	1530003581	S.TR 2SC5231C8-TL-E	T	10.8/109.8
Q19	1580000800	S.FET 3SK324UG-TL-E	T	157.1/12.8
Q20	1580000800	S.FET 3SK324UG-TL-E	T	86/107.4
Q21	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	45.7/123.3
Q22	1530003231	S.TR 2SC5085-Y (TE85R,F)	B	42.6/72
Q23	1530003781	S.TR 2SC5624VH-TL-E	T	11.2/124.4
Q25	1530002680	S.TR 2SC3357-T1	B	87.5/74.9
Q26	1530002680	S.TR 2SC3357-T1	B	43.1/79.7
Q27	1530003291	S.TR 2SC4703-T1 SE	B	87.5/80.9
Q28	1580000800	S.FET 3SK324UG-TL-E	T	28/130.5
Q29	1580000800	S.FET 3SK324UG-TL-E	T	101.2/115.5
Q30	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	26.7/127.9
Q31	1590003230	S.TR UNR9113J-(TX)	B	39.2/104.4
Q32	1580000790	S.FET 3SK318YB-TL-E	T	38.5/105.7
Q33	1580000790	S.FET 3SK318YB-TL-E	T	70.4/109.6
Q34	1530003781	S.TR 2SC5624VH-TL-E	T	54.2/105.5
Q35	1530003781	S.TR 2SC5624VH-TL-E	T	60.7/105.5
Q36	1590003230	S.TR UNR9113J-(TX)	B	43.3/104.3
Q37	1580000790	S.FET 3SK318YB-TL-E	T	57.4/137.1
Q38	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	63.5/114.6
Q39	1580000790	S.FET 3SK318YB-TL-E	T	82.4/120.1
Q40	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	35.5/144.8
Q41	1590001650	S.TR XP4601 (TX)	T	112.6/83.1
Q42	1590001650	S.TR XP4601 (TX)	B	101.8/90.7
Q43	1590003260	S.TR UNR911NJ-(TX)	T	60.7/43.3
Q44	1590003260	S.TR UNR911NJ-(TX)	T	6/90.9
Q45	1590003240	S.TR UNR9114J-(TX)	T	6/37
Q46	1590003240	S.TR UNR9114J-(TX)	T	57.2/38.9
Q47	1590001190	S.TR XP6501-(TX) .AB	T	115.4/94.5
Q48	1590001190	S.TR XP6501-(TX) .AB	T	107.9/95.9

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

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
Q49	1590003290	S.TR UNR9213J-(TX)	T	102.9/93.5
Q50	1590003290	S.TR UNR9213J-(TX)	T	113.8/89.6
Q52	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	25.4/47.8
Q53	1590003230	S.TR UNR9113J-(TX)	T	57/70.6
Q54	1590003270	S.TR UNR9210J-(TX)	T	59/71.2
Q55	1590001190	S.TR XP6501-(TX).AB	B	52.3/40.5
Q56	1590003230	S.TR UNR9113J-(TX)	T	54.9/70.5
Q57	1590001190	S.TR XP6501-(TX).AB	T	53.7/43
Q58	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	82.9/46.3
Q59	1590003290	S.TR UNR9213J-(TX)	T	55/68.4
Q60	1530003321	S.TR 2SC5108-Y (TE85R,F)	T	37.2/48.9
Q61	1510000771	S.TR 2SA1586-GR (TE85R,F)	T	25.1/41.5
Q62	1530002691	S.TR 2SC4116-GR (TE85R,F)	T	23.5/39.1
Q63	1590001190	S.TR XP6501-(TX).AB	B	6/39.8
Q64	1590003290	S.TR UNR9213J-(TX)	B	40.6/38.1
Q65	1590001650	S.TR XP4601 (TX)	B	39.3/41
Q66	1530003221	S.TR 2SC4406-4-TL-E	B	63.3/66.2
Q67	1590001190	S.TR XP6501-(TX).AB	T	7.1/42.1
Q68	1590001650	S.TR XP4601 (TX)	B	39.3/44.6
Q69	1590003230	S.TR UNR9113J-(TX)	T	12/70
Q70	1590003270	S.TR UNR9210J-(TX)	T	14.2/70
Q71	1590003230	S.TR UNR9113J-(TX)	T	9.7/69.9
Q72	1530003581	S.TR 2SC5231C8-TL-E	T	38.4/42.6
Q73	1530003581	S.TR 2SC5231C8-TL-E	T	44.7/38.4
Q74	1530003581	S.TR 2SC5231C8-TL-E	T	41.4/43.2
Q75	1530003221	S.TR 2SC4406-4-TL-E	B	18.5/66.2
Q76	1530003581	S.TR 2SC5231C8-TL-E	T	45.8/42.4
Q79	1590003290	S.TR UNR9213J-(TX)	T	41.2/66.6
Q81	1520000460	S.TR 2SB1132 T100 R	B	101.6/127
Q82	1590003450	S.TR UNR9214J-(TX)	B	106.5/104.3
Q83	1510000671	S.TR 2SA1588-GR (TE85R, F)	B	103.9/103
Q84	1510000671	S.TR 2SA1588-GR (TE85R, F)	B	99.9/104.7
Q86	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	6.7/31.4
Q87	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	15.3/30.5
Q88	1590003290	S.TR UNR9213J-(TX)	T	21.1/21.7
Q90	1590003290	S.TR UNR9213J-(TX)	T	31.5/20.9
Q91	1590003290	S.TR UNR9213J-(TX)	T	64.4/8.5
Q92	1590003230	S.TR UNR9113J-(TX)	T	44.3/10.8
Q93	1590003290	S.TR UNR9213J-(TX)	T	58.6/9.4
Q94	1510000581	S.TR 2SA1362-GR (TE85R,F)	T	115.4/38.4
Q95	1590003290	S.TR UNR9213J-(TX)	B	70/12
Q96	1520000201	S.TR 2SB798-T2-AZ DK	T	124.5/36.5
Q97	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	120.9/38.6
Q98	1590003270	S.TR UNR9210J-(TX)	B	117.1/99.9
Q99	1590002270	S.TR UMG9NTR	T	75.5/22.3
Q100	1590003290	S.TR UNR9213J-(TX)	T	113.3/71.4
Q101	1530003091	S.TR 2SC4213-B (TE85R,F)	T	128/111.5
Q102	1530003091	S.TR 2SC4213-B (TE85R,F)	T	123/109.1
Q103	1530003091	S.TR 2SC4213-B (TE85R,F)	T	125.5/109.1
Q104	1590003260	S.TR UNR911NJ-(TX)	B	74/44.4
Q105	1530003990	S.TR 2SC4738-BL (TE85L,F)	B	70/47.4
Q106	1590003260	S.TR UNR911NJ-(TX)	T	82.2/56.4
Q109	1590003290	S.TR UNR9213J-(TX)	T	78.7/43.8
Q110	1590003300	S.TR UNR921NJ-(TX)	T	89.1/35.5
Q111	1530003581	S.TR 2SC5231C8-TL-E	T	88.5/42.4
Q112	1530003321	S.TR 2SC5108-Y (TE85R,F)	T	82.1/49.1
Q113	1530003581	S.TR 2SC5231C8-TL-E	T	90.4/46.9
Q115	1590003290	S.TR UNR9213J-(TX)	T	85.8/55.7
Q116	1530003321	S.TR 2SC5108-Y (TE85R,F)	T	77.4/63
Q117	1590003290	S.TR UNR9213J-(TX)	T	9.7/67.7
Q118	1590003290	S.TR UNR9213J-(TX)	T	116.6/42.8
Q119	1560000811	S.FET 2SK1069-4-TL-E	B	71.6/36
Q120	1560000811	S.FET 2SK1069-4-TL-E	B	29.3/34.4
Q121	1590003290	S.TR UNR9213J-(TX)	T	76.8/39.4
Q122	1590003290	S.TR UNR9213J-(TX)	B	30.6/41.7
Q123	1520000450	S.TR 2SB1132 T100 Q	T	49.8/121.7
D1	1790001240	S.DIO MA2S728-(TX)	T	12.7/117.1
D2	1790001240	S.DIO MA2S728-(TX)	T	89.8/108.9
D3	1790001240	S.DIO MA2S728-(TX)	T	70.5/113.1
D4	1790001240	S.DIO MA2S728-(TX)	T	37/108.6
D5	1790001240	S.DIO MA2S728-(TX)	T	57/106.8
D6	1790001240	S.DIO MA2S728-(TX)	T	63.5/106.8
D7	1790001260	S.DIO MA2S077-(TX)	T	14.1/97
D8	1790001260	S.DIO MA2S077-(TX)	T	71.2/98.4
D9	1790001260	S.DIO MA2S077-(TX)	T	10.4/97
D10	1790001621	S.DIO 1SV308 (TPL3,F)	T	16.7/100.8
D11	1790001621	S.DIO 1SV308 (TPL3,F)	T	75.7/98.4
D12	1750000721	S.VCP HVC375BTRF-E	T	14.9/102.5
D13	1750000721	S.VCP HVC375BTRF-E	T	76.4/101.5
D14	1750000721	S.VCP HVC375BTRF-E	T	14.9/105.2
D15	1750000721	S.VCP HVC375BTRF-E	T	78.4/103.3
D16	1790001621	S.DIO 1SV308 (TPL3,F)	T	16.7/108.3
D17	1790001621	S.DIO 1SV308 (TPL3,F)	T	82.2/104.8
D18	1790001621	S.DIO 1SV308 (TPL3,F)	T	18.3/116.8
D19	1790001621	S.DIO 1SV308 (TPL3,F)	T	90.8/104.5
D20	1750000721	S.VCP HVC375BTRF-E	T	16.1/119.4
D21	1750000721	S.VCP HVC375BTRF-E	T	94.2/106.2
D22	1790001621	S.DIO 1SV308 (TPL3,F)	T	11.8/130.1
D23	1750000721	S.VCP HVC375BTRF-E	T	16.1/120.6
D24	1750000721	S.VCP HVC375BTRF-E	T	96.8/106.2
D25	1790001250	S.DIO MA2S111-(TX)	B	38.1/77.6
D26	1790001621	S.DIO 1SV308 (TPL3,F)	T	17.4/123.1
D27	1790001621	S.DIO 1SV308 (TPL3,F)	T	99.6/103.7
D28	1720000241	S.DIO 1SV172 (TE85R,F)	T	100.2/109.1
D29	1790001250	S.DIO MA2S111-(TX)	B	82.8/78.4
D30	1720000241	S.DIO 1SV172 (TE85R,F)	T	15.2/127
D31	1750000520	S.DIO DAN222TL	B	41.8/88.2
D32	1790001250	S.DIO MA2S111-(TX)	T	23.3/127.5
D35	1790001260	S.DIO MA2S077-(TX)	T	21.2/98.8
D36	1790001260	S.DIO MA2S077-(TX)	T	53.6/96.8
D37	1790001260	S.DIO MA2S077-(TX)	T	60/96.8
D38	1790001260	S.DIO MA2S077-(TX)	T	67.3/96.8

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
D39	1790000980	S.DIO MA742 (TX)	B	76.8/133.6
D40	1750000711	S.VCP HVC350BTRF-E	T	30/101.3
D41	1750000711	S.VCP HVC350BTRF-E	T	67.8/103.5
D42	1790000980	S.DIO MA742 (TX)	B	41/113.9
D43	1750000711	S.VCP HVC350BTRF-E	T	32.7/101.3
D44	1750000711	S.VCP HVC350BTRF-E	T	67.8/104.8
D45	1750000711	S.VCP HVC350BTRF-E	T	56.8/102.5
D46	1750000721	S.VCP HVC375BTRF-E	T	63.3/102.5
D47	1790000980	S.DIO MA742 (TX)	B	74.9/139.4
D48	1790001250	S.DIO MA2S111-(TX)	T	33.9/136.3
D49	1790001250	S.DIO MA2S111-(TX)	T	35.1/136.3
D50	1750000721	S.VCP HVC375BTRF-E	T	62.1/109
D51	1750000711	S.VCP HVC350BTRF-E	T	55.6/109
D52	1790000980	S.DIO MA742 (TX)	B	30.2/133.8
D53	1790001260	S.DIO MA2S077-(TX)	T	40.3/137.9
D54	1750000711	S.VCP HVC350BTRF-E	T	45.9/110.1
D55	1750000711	S.VCP HVC350BTRF-E	T	74.1/116.8
D56	1790001260	S.DIO MA2S077-(TX)	T	55.6/111.5
D57	1790001260	S.DIO MA2S077-(TX)	T	58.6/111.5
D58	1750000711	S.VCP HVC350BTRF-E	T	48.6/110.1
D59	1750001360	S.DIO L709CER (9401)	B	78.7/150.1
D60	1750000711	S.VCP HVC350BTRF-E	T	74.1/118.1
D61	1750001360	S.DIO L709CER (9401)	B	32.5/143.2
D62	1750001360	S.DIO L709CER (9401)	B	42.6/138.2
D63	1790001250	S.DIO MA2S111-(TX)	T	106.5/119.7
D64	1790001250	S.DIO MA2S111-(TX)	T	90.6/118.6
D65	1790001260	S.DIO MA2S077-(TX)	T	94.8/122.3
D66	1790001250	S.DIO MA2S111-(TX)	T	108.1/117.8
D67	1790001250	S.DIO MA2S111-(TX)	T	91.9/118.6
D68	1720000241	S.DIO 1SV172 (TE85R,F)	T	73.7/125.4
D69	1790001260	S.DIO MA2S077-(TX)	T	108.4/123.2
D70	1720000241	S.DIO 1SV172 (TE85R,F)	T	54.9/119.7
D71	1790001260	S.DIO MA2S077-(TX)	T	93.7/125.7
D72	1790001621	S.DIO 1SV308 (TPL3,F)	T	100.6/128.1
D73	1790001260	S.DIO MA2S077-(TX)	T	108/128.9
D74	1790001621	S.DIO 1SV308 (TPL3,F)	T	106.2/132.4
D75	1750001360	S.DIO L709CER (9401)	B	69.5/145.4
D76	1790001250	S.DIO MA2S111-(TX)	T	65.9/115
D77	1790001260	S.DIO MA2S077-(TX)	T	66.8/140.6
D78	1790001250	S.DIO MA2S111-(TX)	T	62.2/142.3
D79	1790001250	S.DIO MA2S111-(TX)	T	63.4/142.3
D80	1790001250	S.DIO MA2S111-(TX)	T	33.6/144.7
D81	1790001250	S.DIO MA2S111-(TX)	B	29.7/49.9
D82	1790001250	S.DIO MA2S111-(TX)	T	54.2/57.9
D83	1790001250	S.DIO MA2S111-(TX)	T	54.2/50.7
D84	1790001250	S.DIO MA2S111-(TX)	T	61.2/57.8
D85	1790001250	S.DIO MA2S111-(TX)	T	61.2/50.3
D86	1750000370	S.DIO DA221 TL	T	22.5/43.2
D87	1720000791	S.VCP HVC321B1TRF-E	T	35.6/37
D88	1750000370	S.DIO DA221 TL	B	65.5/68.4
D89	1750000831	S.VCP HVC362TRF-E	T	31.5/41.8
D90	1750000831	S.VCP HVC362TRF-E	T	33.1/40.1
D91	1750000721	S.VCP HVC375BTRF-E	T	38.9/35.6
D92	1750000711	S.VCP HVC350BTRF-E	T	38.9/34.4
D93	1790001250	S.DIO MA2S111-(TX)	T	8.9/57.1
D94	1790001250	S.DIO MA2S111-(TX)	T	8.1/49.5
D95	1790001250	S.DIO MA2S111-(TX)	T	16.3/56.9
D96	1790001250	S.DIO MA2S111-(TX)	T	16.3/49.4
D97	1790001250	S.DIO MA2S111-(TX)	T	43.2/41.6
D100	1750000370	S.DIO DA221 TL	B	20.7/68.4
D101	1790001260	S.DIO MA2S077-(TX)	T	37.1/57.1
D102	1790001260	S.DIO MA2S077-(TX)	T	44.3/48.5
D103	1790001621	S.DIO 1SV308 (TPL3,F)	T	46.6/61.2
D104	1790001260	S.DIO MA2S077-(TX)	T	40.2/57.9
D106	1790001260	S.DIO MA2S077-(TX)	T	33.6/69.9
D107	1790001260	S.DIO MA2S077-(TX)	T	37.3/69.9
D108	1790001260	S.DIO MA2S077-(TX)	T	38.5/69.9
D109	1790001250	S.DIO MA2S111-(TX)	T	41.9/63.4
D112	1750000520	S.DIO DAN222TL	B	85.9/102.2
D113	1750000520	S.DIO DAN222TL	B	85.9/104.2
D116	1790001250	S.DIO MA2S111-(TX)	T	8.2/121.7
D117	1730000521	ZEN RD20E-AZ B2		
D118	1790000700	DIO DSA3A1		
D119	1790001250	S.DIO MA2S111-(TX)	B	104.2/105
D120	1790001250	S.DIO MA2S111-(TX)	B	105.7/106.3
D121	1790001250	S.DIO MA2S111-(TX)	B	10.4/29.7
D122	1730002340	S.ZEN MA8047-M (TX)	T	119.2/64
D124	1790001250	S.DIO MA2S111-(TX)		
D125	1790001250	S.DIO MA2S111-(TX) [TPE-01], [EXP-01] only	T	104/76.2
D126	1790001250	S.DIO MA2S111-(TX) [TPE-01], [KOR-01], [AUS-01] only	T	104/77.4
D127	1790001250	S.DIO MA2S111-(TX) [TPE-01], [KOR-01] only	T	104/78.6
D128	1790001250	S.DIO MA2S111-(TX) [TPE-01], [KOR-01], [AUS-01] only	T	104/79.8
D129	1790001250	S.DIO MA2S111-(TX) [TPE-01], [KOR-01], [AUS-01] only	T	106.5/76.2
D133	1790001250	S.DIO MA2S111-(TX) [TPE-01], [KOR-01], [AUS-01] only	T	106.5/77.4
D134	1790001250	S.DIO MA2S111-(TX) [TPE-01], [KOR-01], [AUS-01] only	T	104/72.6
D135	1790001250	S.DIO MA2S111-(TX) except [EXP-01]	T	104/73.8
D136	1790001250	S.DIO MA2S111-(TX) except [EXP-01]	T	104/75
D140	1750000370	S.DIO DA221 TL	T	50/12.3
D141	1790001250	S.DIO MA2S111-(TX)	T	120.9/40.3
D142	1790000980	S.DIO MA742 (TX)	B	11



[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R15	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	103.6/101.6
R16	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	18/128.5
R17	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	85.9/76.2
R18	7030005000	S.RES ERJ2GEJ 471 X (470)	T	19.1/100.4
R19	7030005000	S.RES ERJ2GEJ 471 X (470)	T	78.5/97.2
R20	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	46.1/78.2
R22	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	87.7/67.5
R23	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	17/103.4
R24	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	78.6/100.5
R26	7030004980	S.RES ERJ2GEJ 101 X (100)	T	12.2/106.7
R27	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	17/104.3
R28	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	12.2/109.8
R29	7030005000	S.RES ERJ2GEJ 471 X (470)	T	19.2/106.3
R30	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	79.2/101.2
R31	7030005000	S.RES ERJ2GEJ 471 X (470)	T	82.5/102.5
R33	7030010090	S.RES ERJ2GEJ 180 X (18)	B	90.3/69
R35	7030004970	S.RES ERJ2GEJ 470 X (47)	T	17/110.9
R37	7030005580	S.RES ERJ2GEJ 560 X (56)	B	92.1/69.9
R38	7030004970	S.RES ERJ2GEJ 470 X (47)	T	84.2/105.2
R39	7030007270	S.RES ERJ2GEJ 151 X (150)	T	10.6/116.5
R40	7030009200	S.RES ERJ2GEJ 390 X (39)	T	11.1/117.7
R41	7030004980	S.RES ERJ2GEJ 101 X (100)	T	18.4/112.4
R43	7030007280	S.RES ERJ2GEJ 331 X (330)	B	43.9/66.4
R44	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	46.1/121.5
R45	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	14.4/115.5
R46	7030010090	S.RES ERJ2GEJ 180 X (18)	B	91.2/69.9
R47	7030005300	S.RES ERJ2GEJ 150 X (15)	B	44.3/68.8
R48	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	17.7/113.6
R49	7030004980	S.RES ERJ2GEJ 101 X (100)	T	85.6/104.7
R50	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	88/105.8
R51	7030007270	S.RES ERJ2GEJ 151 X (150)	T	10.6/118.9
R52	7030010040	S.RES ERJ2GEJ-JPW	T	13.1/114.1
R53	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	14/113.2
R54	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	86.8/105.4
R55	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	87.8/107
R56	7030007270	S.RES ERJ2GEJ 151 X (150)	B	89.4/70.7
R57	7030007280	S.RES ERJ2GEJ 331 X (330)	B	42.2/69.3
R58	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	14.4/114.6
R59	7030009200	S.RES ERJ2GEJ 390 X (39)	T	89.1/71.9
R60	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	87.8/108.6
R61	7030010040	S.RES ERJ2GEJ-JPW	T	88.7/108.6
R63	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	44.4/72
R64	7030005010	S.RES ERJ2GEJ 681 X (680)	B	42.2/70.2
R66	7030007270	S.RES ERJ2GEJ 151 X (150)	B	87.9/70.7
R67	7030004980	S.RES ERJ2GEJ 101 X (100)	T	12.3/127.1
R68	7030007270	S.RES ERJ2GEJ 151 X (150)	B	44.6/73.7
R70	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	12.3/126.2
R72	7030005000	S.RES ERJ2GEJ 471 X (470)	T	19.7/113.7
R73	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	10.7/126.2
R74	7030005000	S.RES ERJ2GEJ 471 X (470)	T	89.6/101.6
R75	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	83.6/74.9
R76	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	83.6/74
R77	7030007250	S.RES ERJ2GEJ 220 X (22)	B	41/76.3
R78	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	18.4/119.4
R79	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	19.1/120.3
R80	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	11.6/129
R81	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	94.7/104.4
R82	7030000270	S.RES MCR10EZHH 120 (121)	B	81/75.2
R83	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	95.9/104.1
R85	7030005000	S.RES ERJ2GEJ 471 X (470)	T	18.4/123.3
R86	7030005000	S.RES ERJ2GEJ 471 X (470)	T	99.9/101
R88	7030000180	S.RES MCR10EZHH 22 (220)	B	36/77.8
R89	7030005590	S.RES ERJ2GEJ 680 X (68)	B	84.5/78.9
R90	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	38.4/78.7
R91	7030005010	S.RES ERJ2GEJ 681 X (680)	B	40/79.7
R92	7030000180	S.RES MCR10EZHH 22 (220)	B	34.3/77.8
R93	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	102.6/107.6
R94	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	18.3/127.4
R95	7030000180	S.RES MCR10EZHH 22 (220)	B	80.8/78.5
R96	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	83.3/79.4
R97	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	84.5/80.5
R98	7030004980	S.RES ERJ2GEJ 101 X (100)	T	19.7/124.5
R100	7030000180	S.RES MCR10EZHH 22 (220)	B	79/78.5
R101	7030010040	S.RES ERJ2GEJ-JPW	T	98.1/111.6
R102	7030010040	S.RES ERJ2GEJ-JPW	T	98.1/117
R103	7030010040	S.RES ERJ2GEJ-JPW	T	25/127.6
R104	7030004990	S.RES ERJ2GEJ 221 X (220)	B	39.1/84.3
R105	7030005300	S.RES ERJ2GEJ 150 X (15)	B	85.7/83.9
R106	7030010090	S.RES ERJ2GEJ 180 X (18)	B	36.8/83.1
R107	7030004970	S.RES ERJ2GEJ 470 X (47)	T	27.4/134.4
R108	7030004980	S.RES ERJ2GEJ 101 X (100)	T	30.7/130.1
R109	7030004970	S.RES ERJ2GEJ 470 X (47)	T	103/118
R110	7030004980	S.RES ERJ2GEJ 101 X (100)	T	98.5/114.4
R111	7030004990	S.RES ERJ2GEJ 221 X (220)	B	38.2/84.3
R112	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	27.4/132.8
R113	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	26.1/133
R114	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	103/116.4
R115	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	100.6/118.4
R116	7030005300	S.RES ERJ2GEJ 150 X (15)	B	84.1/83.9
R117	7030004980	S.RES ERJ2GEJ 101 X (100)	B	84.5/85.1
R118	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	28.7/133.2
R119	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	104.3/116.1
R120	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	29.6/135.1
R121	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	105.7/114.1
R122	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	28.3/127.8
R124	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	23.3/128.5
R125	7030010040	S.RES ERJ2GEJ-JPW	B	44.5/90.1
R126	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	29.5/127.4
R128	7030007270	S.RES ERJ2GEJ 151 X (150)	B	43.3/90.6
R129	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	B	45.5/92.1
R133	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	40.8/103.6
R134	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	24.7/98.3
R135	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	58/98.1
R136	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	63.6/98.1

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REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R137	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	68.1/99.6
R138	7030010040	S.RES ERJ2GEJ-JPW	B	85.2/87.3
R139	7030007280	S.RES ERJ2GEJ 331 X (330)	T	54.8/99.3
R140	7030004990	S.RES ERJ2GEJ 221 X (220)	B	87.3/86.9
R141	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	B	86.4/86.9
R142	7030007280	S.RES ERJ2GEJ 331 X (330)	T	61.2/99.3
R143	7030005300	S.RES ERJ2GEJ 150 X (15)	T	60/100.5
R144	7030007250	S.RES ERJ2GEJ 220 X (22)	T	53.6/100.5
R145	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	30.9/103.5
R147	7030007280	S.RES ERJ2GEJ 331 X (330)	T	54.8/100.9
R148	7030005060	S.RES ERJ2GEJ 333 X (33 k)	B	37.7/104.7
R149	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	70.6/103.7
R150	7030007280	S.RES ERJ2GEJ 334 X (330)	T	61.2/100.9
R152	7030004980	S.RES ERJ2GEJ 101 X (100)	B	34.6/105
R153	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	31.8/103.5
R154	7030005600	S.RES ERJ2GEJ 273 X (27 k)	B	74.5/134.2
R155	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	70.6/104.6
R156	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	56.5/101.5
R157	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	33.7/105
R158	7030005080	S.RES ERJ2GEJ 823 X (82 k)	B	35.1/107.9
R159	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	34.7/101.9
R160	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	62.9/101.5
R161	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	67.4/106.7
R162	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	34.6/106.6
R163	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	33.7/109.1
R164	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	56.9/104.8
R165	7030004970	S.RES ERJ2GEJ 470 X (47)	T	36.9/101.9
R166	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	39.6/111.6
R167	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	39.1/110.3
R168	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	63.3/104.8
R169	7030004970	S.RES ERJ2GEJ 470 X (47)	T	72.5/106.7
R170	7030004980	S.RES ERJ2GEJ 101 X (100)	T	56.4/103.6
R171	7030004980	S.RES ERJ2GEJ 101 X (100)	T	62.9/103.6
R172	7030007270	S.RES ERJ2GEJ 151 X (150)	T	39.4/103.3
R173	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	39.7/107.7
R174	7030007270	S.RES ERJ2GEJ 151 X (150)	T	73/109.2
R175	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	40.5/104.8
R176	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	40.8/110.3
R177	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	41.2/108.2
R178	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	29.7/135.5
R179	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	73.3/111.7
R180	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	37.5/107.2
R181	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	73.3/110.8
R182	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	56/106.5
R183	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	53.7/107.3
R184	7030010040	S.RES ERJ2GEJ-JPW	T	38.6/108.3
R185	7030010040	S.RES ERJ2GEJ-JPW	T	69.7/111.8
R186	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	62.4/106.5
R187	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	60.1/107.3
R188	7030006070	S.RES ERJ12YJ101U (100)	B	84.5/144.8
R189	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	68.5/111.2
R190	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	70.9/111.4
R191	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	65/109
R192	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	58.5/109
R193	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	43/111.7
R194	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	44.9/107.8
R195	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	61.6/111.4
R196	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	44.4/111.3
R197	7030004980	S.RES ERJ2GEJ 101 X (100)	B	45.7/106.2
R198	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	46.1/107.8
R199	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	52.9/110.7
R200	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	46.8/108.1
R201	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	72.1/139.6
R202	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	72.7/133.2
R203	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	77/117
R204	7030005530	S.RES ERJ2GEJ 100 X (10)	T	38.2/137.9
R205	7030005060	S.RES ERJ2GEJ 333 X (33 k)	T	41.7/104.7
R206	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	47.7/108.1
R208	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	77/117.9
R209	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	74.1/133
R210	7030006070	S.RES ERJ12YJ101U (100)	B	45.5/127
R211	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	44.8/104.3
R212	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	55.9/117.3
R213	7030005530	S.RES ERJ2GEJ 100 X (10)	T	93.4/122.1
R215	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	103.1/106.1
R216	7030005530	S.RES ERJ2GEJ 100 X (10)	T	106.4/123.2
R217	7030005710	S.RES ERJ2GEJ 121 X (120)	T	72.4/122.5
R218	7030004980	S.RES ERJ2GE		

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R245	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	34.7/148.8
R246	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	112/88.6
R247	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	117/92.2
R248	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	109.6/93.6
R249	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	109/89.6
R251	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	115.3/82.7
R252	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	113.6/94.5
R253	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	114.4/83.6
R254	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	106.2/95.9
R255	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	112.3/81.3
R256	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	T	116.1/92.2
R257	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	T	108.7/93.6
R258	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	111.6/93.3
R259	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	106.2/92.7
R261	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	99.6/90.9
R262	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	111.9/86.8
R263	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	102.3/92.5
R264	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	B	99.6/90.9
R265	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	111.9/87.7
R266	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	116.9/97.4
R267	7030007340	S.RES ERJ2GEJ 153 X (15 k)	T	110.7/87.2
R268	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	108.7/98.1
R269	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	106.4/90.4
R270	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	107.6/90.4
R271	7030007310	S.RES ERJ2GEJ 155 X (1.5 M)	T	112.7/94.5
R272	7030007280	S.RES ERJ2GEJ 331 X (330)	T	115.8/96.3
R273	7030007310	S.RES ERJ2GEJ 155 X (1.5 M)	T	105.3/95.9
R274	7030007280	S.RES ERJ2GEJ 331 X (330)	T	107.8/98.1
R275	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	105.5/90
R276	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	111.9/85
R277	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	111.6/92.4
R278	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	110.3/85
R279	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	109.6/88.7
R280	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	105.3/94.2
R281	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	103.7/90
R282	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	108/88.7
R283	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	111.6/91.5
R284	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	105.3/91.8
R285	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	107.9/85
R286	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	103.7/88.4
R287	7030005700	S.RES ERJ2GEJ 274 X (270 k)	B	21.2/46.8
R288	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	110.4/91
R290	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	103.2/92
R292	7030010040	S.RES ERJ2GEJ-JPW	B	20/44.7
R293	7030010040	S.RES ERJ2GEJ-JPW	B	59.9/42.1
R294	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	102.5/87.4
R295	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	104.1/86.3
R296	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	102.5/86.5
R298	7030008290	S.RES ERJ2GEJ 183 X (18 k)	B	16.5/40.5
R299	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	21.2/45.9
R301	7030004980	S.RES ERJ2GEJ 101 X (100)	B	55.4/40.9
R302	7030010040	S.RES ERJ2GEJ-JPW	B	51.8/34
R303	7030008290	S.RES ERJ2GEJ 183 X (18 k)	B	55.8/37
R304	7030007060	S.RES ERJ2GEJ 684X (680 k)	B	27.4/46.9
R305	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	57.5/74.1
R306	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	B	54.9/37.9
R307	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	51.5/60.7
R308	7030005000	S.RES ERJ2GEJ 471 X (470)	B	54/65.9
R309	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	29.7/50.9
R310	7030005170	S.RES ERJ2GEJ 474 X (470 k)	B	52.3/38.6
R311	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	58.8/37.4
R312	7030007250	S.RES ERJ2GEJ 220 X (22)	B	29.5/45.6
R313	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	26/40.9
R314	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	53.6/61.2
R315	7030010040	S.RES ERJ2GEJ-JPW	B	54/67.5
R316	7030007340	S.RES ERJ2GEJ 153 X (15 k)	T	55.5/51.2
R317	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	54.8/60.7
R318	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	30.2/47.4
R319	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	51.9/37.4
R320	7030010040	S.RES ERJ2GEJ-JPW	B	26.7/43.7
R321	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	56.1/61
R322	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	54.7/56.3
R323	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	54.7/48.8
R324	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	54.8/63.9
R325	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	31.6/47.4
R327	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	54.5/40.3
R328	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	54.5/41.2
R329	7030010040	S.RES ERJ2GEJ-JPW	B	100.4/21.7
R330	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	62.2/59
R331	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	62.5/51.1
R332	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	51.9/42.8
R333	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	23.1/49.7
R334	7030007340	S.RES ERJ2GEJ 153 X (15 k)	T	59.3/64.3
R335	7030005000	S.RES ERJ2GEJ 471 X (470)	T	52.9/40.3
R336	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	22.5/48.8
R337	7030005600	S.RES ERJ2GEJ 273 X (27 k)	T	24/43.5
R338	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	22.7/47.9
R339	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	B	84.3/46.1
R340	7030008290	S.RES ERJ2GEJ 183 X (18 k)	T	22.1/41.6
R341	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	57.3/61.9
R342	7030007280	S.RES ERJ2GEJ 331 X (330)	T	59.8/68.7
R343	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	23.3/41.4
R344	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	21.6/39.5
R345	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	55.1/66.8
R346	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	53/65.6
R347	7030004980	S.RES ERJ2GEJ 101 X (100)	T	26.8/42.5
R348	7030005000	S.RES ERJ2GEJ 471 X (470)	T	36.5/47.2
R349	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	37.7/47.5
R350	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	38.7/48.9
R351	7030004980	S.RES ERJ2GEJ 101 X (100)	B	8.6/40.3
R352	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	B	7.6/38
R353	7030008290	S.RES ERJ2GEJ 183 X (18 k)	B	8.8/38.4
R354	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	44.5/39.1
R355	7030010040	S.RES ERJ2GEJ-JPW	T	26.9/37.3

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REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R356	7030007280	S.RES ERJ2GEJ 331 X (330)	T	41.6/49.3
R358	7030005170	S.RES ERJ2GEJ 474 X (470 k)	B	6/38
R359	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	7.9/36.8
R360	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	40/36.6
R362	7030004980	S.RES ERJ2GEJ 101 X (100)	T	27.8/37.3
R363	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	B	40.6/42.9
R364	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	B	38.8/42.9
R365	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	27.4/36.1
R366	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	5.2/36.8
R367	7030010040	S.RES ERJ2GEJ-JPW	B	11.1/42.1
R368	7030008290	S.RES ERJ2GEJ 183 X (18 k)	T	58.7/42.8
R369	7030007280	S.RES ERJ2GEJ 331 X (330)	T	27.4/34.3
R370	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	38.8/37.4
R372	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	8.5/59
R373	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	B	41.6/43.9
R374	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	7.3/39.4
R375	7030005000	S.RES ERJ2GEJ 471 X (470)	B	8.5/65
R376	7030008300	S.RES ERJ2GEJ 184 X (180 k)	T	7.3/40.3
R377	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	B	41.2/45.1
R378	7030010040	S.RES ERJ2GEJ-JPW	T	29/36.1
R379	7030004970	S.RES ERJ2GEJ 470 X (47)	B	62.4/68.3
R380	7030005000	S.RES ERJ2GEJ 471 X (470)	B	61.5/66.6
R381	7030005000	S.RES ERJ2GEJ 471 X (470)	B	63.6/64.4
R382	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	36.3/38.4
R383	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	8.2/60.2
R384	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	65.6/65.9
R385	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	5.4/41.9
R386	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	B	37.3/43.3
R388	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	9.4/59.9
R389	7030010040	S.RES ERJ2GEJ-JPW	B	8.5/66.6
R390	7030008400	S.RES ERJ2GEJ 182 X (18 k)	T	29.9/37
R394	7030008270	S.RES RR0510R-104-D (100 k)	T	37.2/37.5
R395	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	63.8/67.9
R396	7030005000	S.RES ERJ2GEJ 471 X (470)	T	5.6/39.4
R397	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	10.7/60.2
R398	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	16.5/69.2
R399	7030007280	S.RES ERJ2GEJ 331 X (330)	B	67.2/66.8
R400	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	9.4/62.2
R402	7030007340	S.RES ERJ2GEJ 153 X (15 k)	T	6.3/50.3
R403	7030005820	S.RES RR0510P-103-D (10 k)	T	36/41.1
R404	7030005820	S.RES RR0510P-103-D (10 k)	T	42.9/36.3
R405	7030005820	S.RES RR0510P-103-D (10 k)	T	36/42.7
R406	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	9.4/55.4
R407	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	9.4/47.9
R408	7030004970	S.RES ERJ2GEJ 470 X (47)	T	37/43.8
R409	7030009270	S.RES ERJ2GEJ 821 X (820)	T	40.1/39.5
R411	7030005820	S.RES RR0510P-103-D (10 k)	T	43.2/38.4
R412	7030005750	S.RES RR0510R-470-D (47)	T	44.3/40
R413	7030008280	S.RES ERJ2GEJ 271 X (270)	T	46.3/34.9
R414	7030007340	S.RES ERJ2GEJ 153 X (15 k)	T	13.9/63.5
R415	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	7/65.5
R416	7030010040	S.RES ERJ2GEJ-JPW	B	73.6/74.5
R417	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	16.7/59.5
R418	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	17/51.5
R419	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	12/61
R420	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	40/43.5
R421	7030008400	S.RES ERJ2GEJ 182 X (18 k)	T	41.5/41.6
R422	7030007280	S.RES ERJ2GEJ 331 X (330)	T	16.1/68
R423	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	40.3/46.4
R426	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	44.3/42.4
R427	7030009290	S.RES ERJ2GEJ 562 X (5.6 k)	T	45.9/40.9
R428	7030010040	S.RES ERJ2GEJ-JPW	T	37.8/60.7
R429	7030004970	S.RES ERJ2GEJ 470 X (47)	B	15.8/67.5
R430	7030005000	S.RES ERJ2GEJ 471 X (470)	B	16.7/66.6
R431	7030005000	S.RES ERJ2GEJ 471 X (470)	B	18/63.5
R432	7030005590	S.RES ERJ2GEJ 680 X (68)	T	44.6/45.6
R433	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	45.3/47.3
R434	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	20.4/65.5
R436	7030010040	S.RES ERJ2GEJ-JPW	T	37.2/62.3
R438	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	19/68.9
R439	7030004990	S.RES ERJ2GEJ 221 X (220)	B	21.7/65.9
R440	7030004970	S.RES ERJ2GEJ 470 X (47)	T	63.1/88.3
R441	7030010040	S.RES ERJ2GEJ-JPW	T	34.1/56.2
R443	7030010040	S.RES ERJ2GEJ-JPW	T	68.8/81.5
R444	7030004990	S.RES ERJ2GEJ 221 X (220)	T	67.5/86.3
R445	7030010040	S.RES ERJ2GEJ-JPW	T	44/66.7
R446	7030010040	S.RES ERJ2GEJ-JPW	T	44.9/65.8
R447	7030004990	S.RES ERJ2GEJ 221 X (220)	T	68.6/87.4
R448	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	46/56.1

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REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R481	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	124.8/81.4
R482	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	116.8/86.2
R483	7030000020	S.RES MCR10EZHJ 1 (010)	T	128/20.6
R484	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	118.3/77.1
R485	7030000400	S.RES MCR10EZHJ 1.5 k	B	98.7/120.5
R486	7030004980	S.RES ERJ2GEJ 101 X (100)	T	110.1/63.1
R489	7030004980	S.RES ERJ2GEJ 101 X (100)	T	126.3/74
R490	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	124/24.8
R493	7030004980	S.RES ERJ2GEJ 101 X (100)	T	128.7/74.3
R494	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	8.4/33.2
R495	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	6.8/33.2
R497	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	123.6/23.9
R498	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	101.6/102.2
R499	7030005000	S.RES ERJ2GEJ 471 X (470)	B	103.4/101.3
R500	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	101.8/104.5
R501	7030005000	S.RES ERJ2GEJ 471 X (470)	B	102.2/105.7
R504	7030004980	S.RES ERJ2GEJ 101 X (100)	T	125.7/24.8
R506	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	125.2/23.9
R508	7030004980	S.RES ERJ2GEJ 101 X (100)	B	128.7/65.7
R509	7510001770	S.TMR NTCG10 4LH 473JT	B	113.6/89.2
R510	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	112.4/89.6
R511	7030004980	S.RES ERJ2GEJ 101 X (100)	B	116.3/88.6
R512	7030004980	S.RES ERJ2GEJ 101 X (100)	B	117.2/88.8
R514	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	7.6/29.7
R515	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	6/29.7
R516	7410001230	S.ARY EXB28V101JX	B	126.9/65.8
R517	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	9.6/31.4
R518	7030004980	S.RES ERJ2GEJ 101 X (100)	B	106.5/83.1
R519	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	8.4/31.9
R520	7410001230	S.ARY EXB28V101JX	B	108.5/85.2
R521	7030005521	S.RES ERA3YKD 334V (330 k)	T	116.9/68.4
R522	7030005501	S.RES ERA3YKD 124V (120 k)	T	118.1/67.5
R523	7030005691	S.RES ERA3YED 123V (12 k)	T	118.8/69.6
R524	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	117.8/65.4
R525	7410001230	S.ARY EXB28V101JX	B	110.6/87.2
R527	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	15.7/28.6
R529	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	13.2/27.4
R530	7030005170	S.RES ERJ2GEJ 474 X (470 k)	T	114.1/65.9
R532	7030005060	S.RES ERJ2GEJ 333 X (33 k)	T	13.8/30.2
R533	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	13.8/28.6
R534	7030004980	S.RES ERJ2GEJ 101 X (100)	T	107.9/65.5
R536	7030004980	S.RES ERJ2GEJ 101 X (100)	T	112/63.4
R537	7030004980	S.RES ERJ2GEJ 101 X (100)	T	12.9/30.5
R538	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	16.7/28.6
R539	7030004980	S.RES ERJ2GEJ 101 X (100)	B	124.2/65.3
R540	7030004980	S.RES ERJ2GEJ 101 X (100)	B	125.1/66
R541	7030005600	S.RES ERJ2GEJ 273 X (27 k)	T	17.6/28.6
R545	7030007340	S.RES ERJ2GEJ 153 X (15 k)	T	19.9/28.6
R547	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	25.5/25.9
R549	7030010040	S.RES ERJ2GEJ-JPW	T	24.3/27.7
R550	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	22.5/22.8
R552	7030004980	S.RES ERJ2GEJ 101 X (100)	B	98.8/75.3
R553	7030004980	S.RES ERJ2GEJ 101 X (100)	T	119.4/66.6
R554	7410001230	S.ARY EXB28V101JX	B	120.6/61.1
R556	7410001230	S.ARY EXB28V101JX	B	102.8/66.7
R557	7030004980	S.RES ERJ2GEJ 101 X (100)	T	107.9/67.5
R558	7410001230	S.ARY EXB28V101JX	B	99/70
R559	7410001230	S.ARY EXB28V101JX	B	110.6/59
R560	7030008290	S.RES ERJ2GEJ 183 X (18 k)	T	24.3/26.1
R561	7410001230	S.ARY EXB28V101JX	B	105.8/62.5
R562	7030005170	S.RES ERJ2GEJ 474 X (470 k)	T	19/27
R563	7410001230	S.ARY EXB28V101JX	B	101/68.4
R564	7410001230	S.ARY EXB28V101JX	B	104.6/64.9
R566	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	T	21.3/23.7
R567	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	110.1/79.3
R568	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	110.5/78.1
R569	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	64.8/5.6
R570	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	30.6/28
R571	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	43.7/12.6
R572	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	112.2/98.1
R573	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	110.4/98.1
R574	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	B	27.3/23.9
R575	7030008410	S.RES ERJ2GEJ 392 X (3.9 k)	B	28.5/23.5
R577	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	36.5/20
R578	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	B	37.3/24.1
R579	7030010040	S.RES ERJ2GEJ-JPW	B	66.3/12.7
R581	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	58.3/7.7
R582	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	36.1/25.7
R583	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	36.1/24.1
R584	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	37/25.7
R585	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	37/24.1
R586	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	113.1/98.1
R587	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	111.3/98.1
R588	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	T	50.6/10.4
R589	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	33.3/24
R590	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	65.7/5.6
R591	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	74.6/4.4
R592	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	114.3/101.2
R593	7030005010	S.RES ERJ2GEJ 681 X (680)	T	115.9/103.1
R594	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	59/9.6
R598	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	B	65/8
R600	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	B	40/14.3
R608	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	108.5/101.8
R609	7030005600	S.RES ERJ2GEJ 273 X (27 k)	T	105.3/104.2
R610	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	106.7/101.8
R611	7030005600	S.RES ERJ2GEJ 273 X (27 k)	T	105.8/101.8
R612	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	107.6/101.8
R613	7030005600	S.RES ERJ2GEJ 273 X (27 k)	T	105.7/103
R614	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	B	65/6.4
R615	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	99.4/32.7
R616	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	65/9.6
R617	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	T	120.1/41.7
R618	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	115.4/40.4
R619	7030005000	S.RES ERJ2GEJ 471 X (470)	T	116.6/40.9

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R620	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	121.3/41.4
R621	7030005160	S.RES ERJ2GEJ 105 X (1 M)	T	116.7/44.4
R623	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	118.5/99.4
R624	7030004980	S.RES ERJ2GEJ 101 X (100)	B	70.2/14.7
R625	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	125.9/114.3
R626	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	120.9/108.1
R627	7030008410	S.RES ERJ2GEJ 392 X (3.9 k)	T	112.5/77.7
R628	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	70.4/17.9
R630	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	127.9/107.5
R631	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	120.9/106.3
R632	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	114/77.5
R635	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	122.6/104.9
R637	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	70.4/16.1
R638	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	127.5/113.4
R639	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	122.5/107.2
R640	7030009290	S.RES ERJ2GEJ 562 X (5.6 k)	B	59.7/17.7
R641	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	128.3/108.7
R642	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	123.2/111.8
R643	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	70.4/17
R644	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	114.4/76.3
R645	7030007350	S.RES ERJ2GEJ 393 X (39 k)	T	114.9/77.5
R647	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	127.6/109.2
R649	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	T	125/107.2
R653	7030009280	S.RES ERJ2GEJ 391 X	T	128.7/103.9
R658	7030009280	S.RES ERJ2GEJ 391 X	T	128.7/116.1
R659	7030000100	S.RES MCR10EZHJ 4.7 (4R7)	T	124.8/142.5
R660	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	61.4/17.2
R661	7030000100	S.RES MCR10EZHJ 4.7 (4R7)	T	104.7/145.9
R663	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	125.2/106.3
R664	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	61.4/18.8
R665	7030008010	S.RES ERJ2GEJ 123 X (12 k)	T	122.6/144.3
R677	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	75.9/47.6
R678	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	65.8/45.9
R679	7030005700	S.RES ERJ2GEJ 274 X (270 k)	B	65.8/46.8
R680	7030010040	S.RES ERJ2GEJ-JPW	B	64.6/44.8
R681	7030005530	S.RES ERJ2GEJ 100 X (10 k)	B	73.5/46
R682	7030007060	S.RES ERJ2GEJ 684X (680 k)	B	71.8/46.7
R683	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	70.6/40.9
R684	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	75.4/7.6
R685	7030007250	S.RES ERJ2GEJ 220 X (22)	T	75.1/45.7
R686	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	68.1/49.8
R688	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	67.4/48.8
R690	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	67.4/47.8
R694	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	T	72/37.5
R695	7030004980	S.RES ERJ2GEJ 101 X (100)	T	72.8/36.6
R696	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	71.5/36.3
R697	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	74.6/35.1
R698	7030007570	S.RES ERJ2GEJ 122 X (1.2 k)	T	72.4/34.7
R699	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	80.6/44.6
R700	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	79.3/41.8
R701	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	82.2/44.6
R702	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	81.8/43.4
R703	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	85.7/35
R704	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	83.6/35.8
R705	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	84/38.5
R706	7030009530	S.RES ERJ2GEJ 270 X (27)	T	84.9/58.4
R707	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	75.2/49.2
R708	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	88.1/39.3
R709	7030010040	S.RES ERJ2GEJ-JPW	T	85.3/61.3
R710	7030007260	S.RES ERJ2GEJ 330 X (33)	T	84.9/57.5
R711	7030009530	S.RES ERJ2GEJ 270 X (27)	T	83.3/58.4
R712	7030004970	S.RES ERJ2GEJ 470 X (47)	T	86.9/44.2
R713	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	86.9/42.6
R714	7030009270	S.RES ERJ2GEJ 821 X (820)	T	90.3/39.1
R716	7030010040	S.RES ERJ2GEJ-JPW	T	84.5/62.9
R717	7030005710	S.RES ERJ2GEJ 121 X (120)	T	90.3/42.3
R718	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	83.6/57.2
R719	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	83.7/47.6
R720	7030005040	S.RES ERJ2GEJ 472 X (47 k)	T	86.3/63.8
R721	7030004990	S.RES ERJ2GEJ 221 X (220)	T	82.3/47.6
R722	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	82.5/60.3
R723	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	88.7/45.3
R724	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	T	90.3/45.3
R725	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	85.3/49.2
R726	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	84.9/48
R727	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	88.7/44.4
R728	7030005010	S.RES ERJ2GEJ 681 X (680)	T	87







[MAIN UNIT]

Table with 5 columns: REF NO., ORDER NO., DESCRIPTION, M., H/V LOCATION. Contains 428 rows of data with various part numbers and descriptions.

[MAIN UNIT]

Table with 5 columns: REF NO., ORDER NO., DESCRIPTION, M., H/V LOCATION. Contains 428 rows of data with various part numbers and descriptions.

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





**[MAIN UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
EP40	6910018460	S.BEA MMZ1005Y102C-T	B	127.7/36.8
EP41	6910018460	S.BEA MMZ1005Y102C-T	B	127.7/34.1
EP42	6910018460	S.BEA MMZ1005Y102C-T	B	127.7/35.9
EP43	6910018460	S.BEA MMZ1005Y102C-T	B	127.7/33.2
EP47	6910018460	S.BEA MMZ1005Y102C-T	T	45.7/57.9
EP48	6910018460	S.BEA MMZ1005Y102C-T	T	91/61.3
EP49	6910014690	S.BEA MPZ1608S221A-T	T	121.3/152.3
EP50	6910014690	S.BEA MPZ1608S221A-T	T	109.4/155.1
EP51	6910018460	S.BEA MMZ1005Y102C-T	T	119.3/144.2
EP52	6910014690	S.BEA MPZ1608S221A-T	T	128.6/143.6
EP53	6910014690	S.BEA MPZ1608S221A-T	T	126.3/144.3
EP54	6910014690	S.BEA MPZ1608S221A-T	T	113.9/138.9
EP55	6910014690	S.BEA MPZ1608S221A-T	T	108.6/147.8
EP56	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/38.5
EP57	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/37.6
EP58	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/36.7
EP59	6910014690	S.BEA MPZ1608S221A-T	B	117.2/36.3
EP60	6910014690	S.BEA MPZ1608S221A-T	B	117.2/35.1
EP61	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/34.3
EP62	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/33.4
EP63	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/32.5
EP64	6910018460	S.BEA MMZ1005Y102C-T	B	119.3/31.6
EP66	6910018460	S.BEA MMZ1005Y102C-T	B	127.7/35
EP68	6910018460	S.BEA MMZ1005Y102C-T	B	41.6/14.3
EP69	6910018460	S.BEA MMZ1005Y102C-T	T	52.6/10.4
EP70	6910018460	S.BEA MMZ1005Y102C-T	T	45/8
EP71	6910012350	S.BEA MMZ1608Y 102BT	T	47.5/130.7

**[VR1 UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R1	7210003250	VAR RV-320 (RK097221005H)		
W1	8900016030	CBL OPC-1666 <TJM>		

**[VR2 UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R1	7210003250	VAR RV-320 (RK097221005H)		
W1	8900016030	CBL OPC-1666 <TJM>		

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.
J1	6510004880	MR-DSE-01	1
J2	6510004880	MR-DSE-01	1
P1	6510009580	ZHR-2	1
SP1	2510001160	057P0802	1
MF1	2710000820	EFB0412VHD-6P38	1
W1	9016420020	23/04/140/B09/W01	1
W2	9016420010	23/00/140/B09/W01	1
MP1	8010020640	2969 CHASSIS	1
MP2	8210023550	2969 CHASSIS PANEL	1
MP3	8310068650	2969 MAGNET PLATE	1
MP5	8110009000	2969 U-COVER	1
MP6	8110009010	2969 L-COVER	1
MP7	8110009020	2969 FAN COVER	1
MP8	8930071460	2969 SP SPONGE	1
MP9	8930071380	2969 IC CLIP	1
MP10	8810009611	Screw M2.6X6 ZK3	17
MP12	8810008661	Screw BT B0 3X8 NI-ZC3 (BT)	11
MP13	8810008661	Screw BT B0 3X8 NI-ZC3 (BT)	4
MP14	8810008661	Screw BT B0 3X8 NI-ZC3 (BT)	4
MP15	8810009991	Screw BT B0 3X8 NI-ZK3 (BT)	5
MP16	8810010141	Screw PH M3X30 ZK3	4
MP18	8930014980	59 saran net	1
MP19	8930072260	2969 NET	1
MP20	8930071590	THERMALLY SHEET (BI)	1
MP36	8930016800	Thermal sheet (U)	1

## [CONTROL UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J5	6510025730	HJC0187-010024	1
DS1	5030003040	M6-0103TRM-5	1
S15	2250000570	SW-169	1
S16	2250000570	SW-169	1
MP1	8210023490	2969 FRONT PANEL	1
MP2	8210023500	2969 REAR PANEL	1
MP3	8310068780	2969 WINDOW PLATE (B)	1
MP4	8310068550	2969 WINDOW LINE	1
MP5	8310068560	2969 SUB RING	2
MP6	8310068570	2969 MAIN RING	2
MP7	8610013060	KNOB K-263	1
MP8	8610013070	KNOB K-263 (A)	1
MP9	8610013030	KNOB N-353	2
MP10	8610013040	KNOB N-354	2
MP11	8610013050	KNOB N-355	2
MP12	8310068600	2969 KNOB PLATE	2
MP13	8610011310	KNOB K-229	2
MP14	8610013100	KNOB K-229 (J)	2
MP15	8610013080	KNOB K-229 (K)	1
MP16	8610013090	KNOB K-229 (L)	1
MP17	8610013110	KNOB K-229 (M)	1
MP18	8210023540	2969 REFLECTOR	1
MP19	8930071250	2969 WINDOW SHEET	1
MP20	8930071430	2969 KEY SPONGE	1
MP21	8930071410	2969 KEY SHEET	1
MP23	8930006440	Push spring (F)	2
MP25	8830003020	bit insert SB-264540-CD	2
MP26	8610007510	knob spring NO.7800	2
MP27	8610007420	knob spring NO.6601	2
MP28	8830001010	HEX NUT (A)	2
MP29	8810009221	Screw BT B0 2X8 NI-ZK3 (BT)	8
MP30	8810009611	Screw M2.6X6 ZK3	2
MP40	8930071860	2969 LCD PLATE	1
MP41	8930072030	2969 LCD FILTER	1
MP42	8930072020	2969 LCD SHEET	1
MP44	8930072050	2969 RBEF SHEET	1

## [VR1 UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
R1	7210003250	RV-320	1
W1	8900016030	OPC-1666	1

## [VR2 UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
R1	7210003250	RV-320	1
W1	8900016030	OPC-1666	1

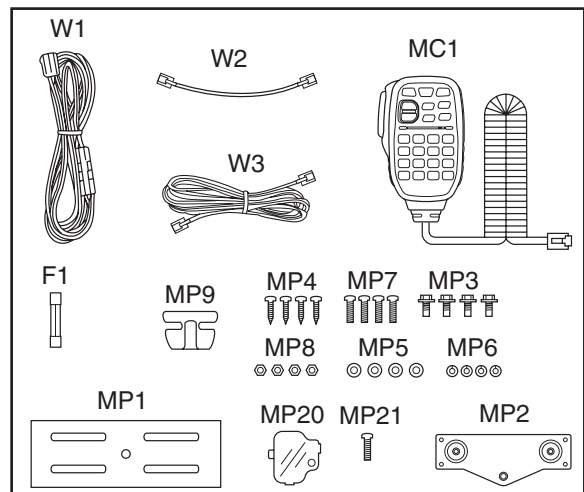
## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J2	6510023110	3008L-8P8C	1
J3	6510025950	PCB-606 (6P6C)	1
J4	6510023161	DN-508B-6-L	1
J5	6450001430	HSJ1462-01-010	1
J8	6510025940	PJ-3047S	1
J9	6450001440	HSJ1403-01-010	1
W1	8900016070	OPC-1669	1
W2	8900016070	OPC-1669	1
W5	7120000470	ERDS2T0	1
W6	7120000470	ERDS2T0	1
W7	8900016020	OPC-1671	1
MP2*	8510018150	2969 B-VCO CASE	1
MP3*	8510014940	2601 VCO CASE	1
MP4*	8510018150	2969 B-VCO CASE	1
MP5*	8510014940	2601 VCO CASE	1
MP6*	8510016470	2775 VCO CASE	1
MP7*	8510016470	2775 VCO CASE	1
MP8*	8510018140	2969 S-VCO CASE	1
MP9*	8510018140	2969 S-VCO CASE	1
MP10	8510018160	2969 B-VCO COVER	2
MP11	8510014950	2601 VCO COVER	2
MP12	8510016460	2775 VCO COVER	2
MP13	8510016460	2775 VCO COVER	2
MP14	8930060270	2633 M-SHEET	2
MP15	8930059770	2633 M-HOLDER	2

\*: Refer to SECTION 8 BOARD LAYOUTS.

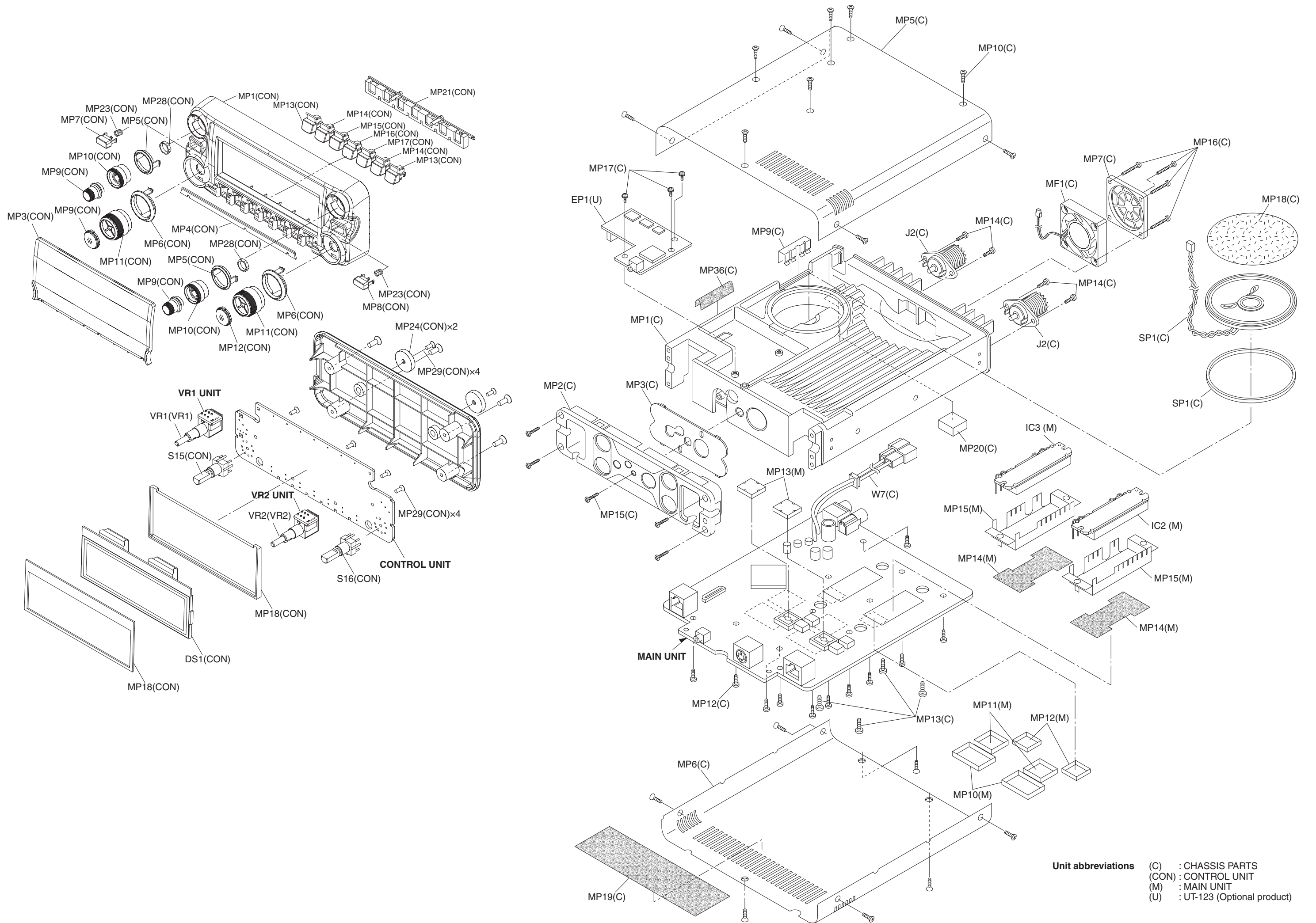
## [ACCESSORIES]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
MC1	Optional	HM-133	1
F1	5210000080	FGB 20A	1
W1	Optional	OPC-1132	1
W2	8900016370	OPC-1712	1
W3	8900016050	OPC-1663	1
MP1	8010016730	150 MOBIL BRACKET (SI)	1
MP2	8930041170	452 FELT (SI)	2
MP3	8820000530	Flange bolt M4X8 NI	4
MP4	8810000951	Screw BT A0 5X16 ZC3	4
MP5	8850000180	Flat washer M5 SUS	4
MP6	8850000500	S-washer M5 SUS	4
MP7	8810000471	Screw PH (+-) M5X12 ZC3	4
MP8	8830000250	Nut M5 SUS	4
MP9	8930007300	MIC hanger	1
MP20	8310068640	2969 CHASSIS PLATE	1
MP21	8810009611	Screw M2.6X6 ZK3	1
MP22	8010020830	2969 BRACKET	1



Screw abbreviations

A, B0, BT: Self-tapping PH: Pan head ZK: Black NI-ZU: Nickel-Zinc SUS: Stainless



**Unit abbreviations**

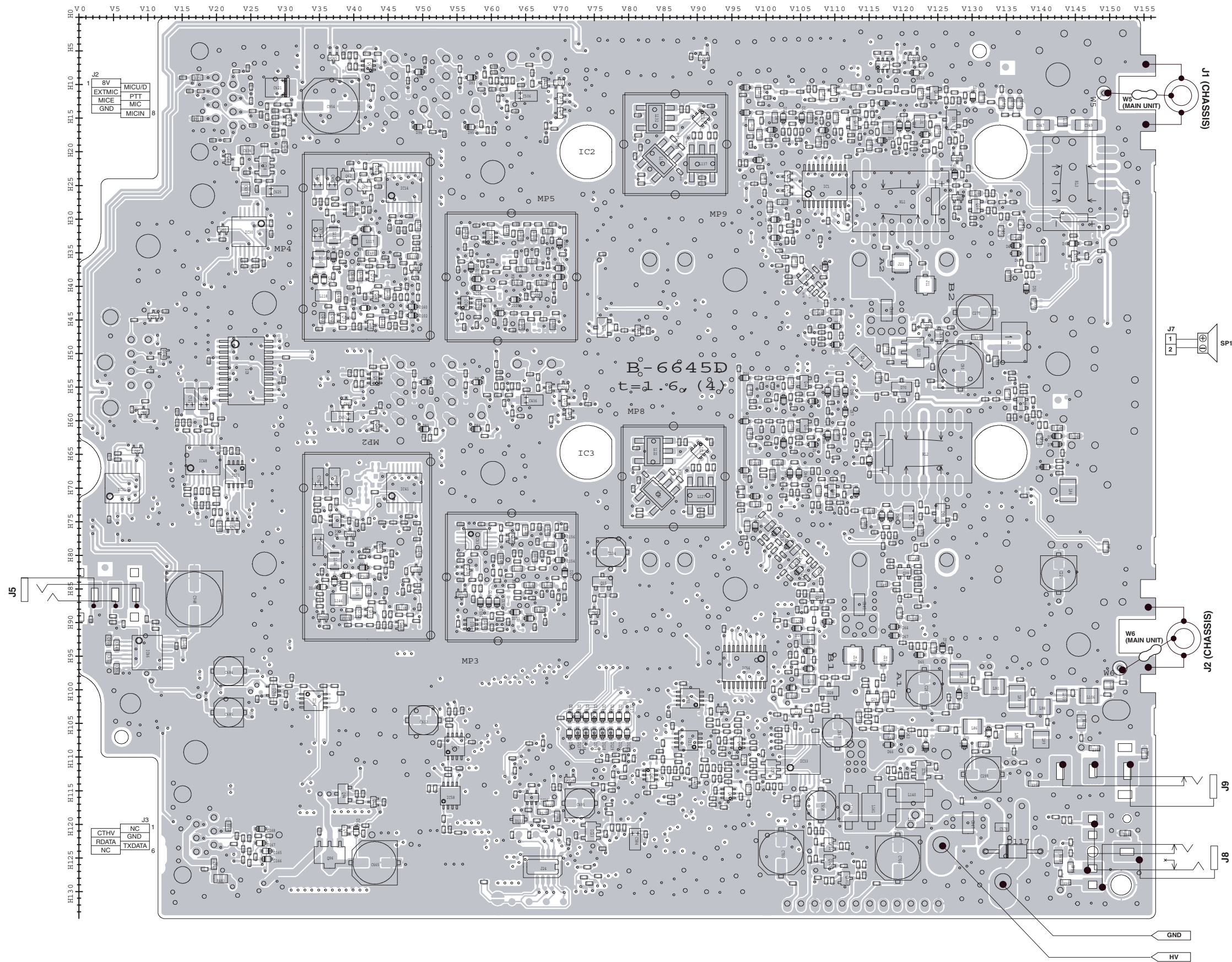
- (C) : CHASSIS PARTS
- (CON) : CONTROL UNIT
- (M) : MAIN UNIT
- (U) : UT-123 (Optional product)



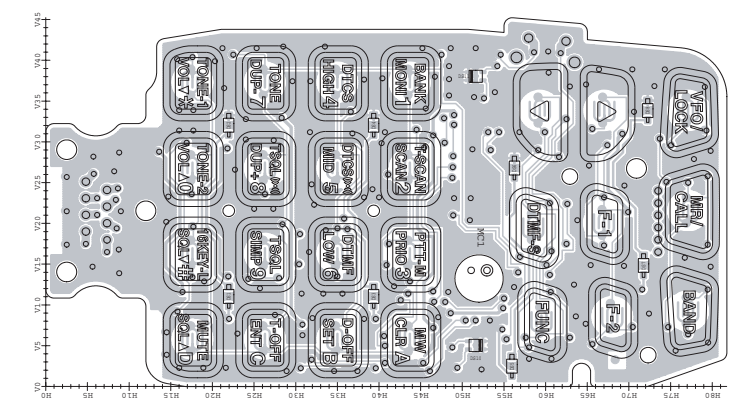
# SECTION 8

# BOARD LAYOUTS

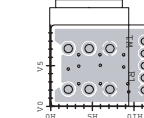
• MAIN UNIT (TOP VIEW)



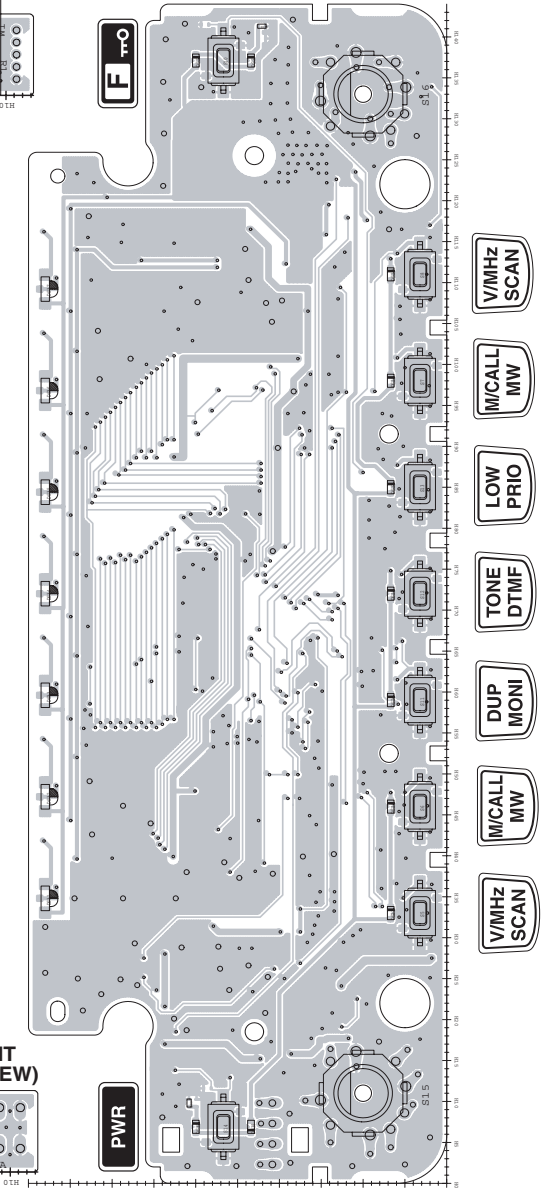
• HM-133 (TOP VIEW)



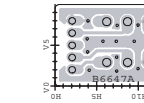
• VR1 UNIT (TOP VIEW)



• CONTROL UNIT (TOP VIEW)

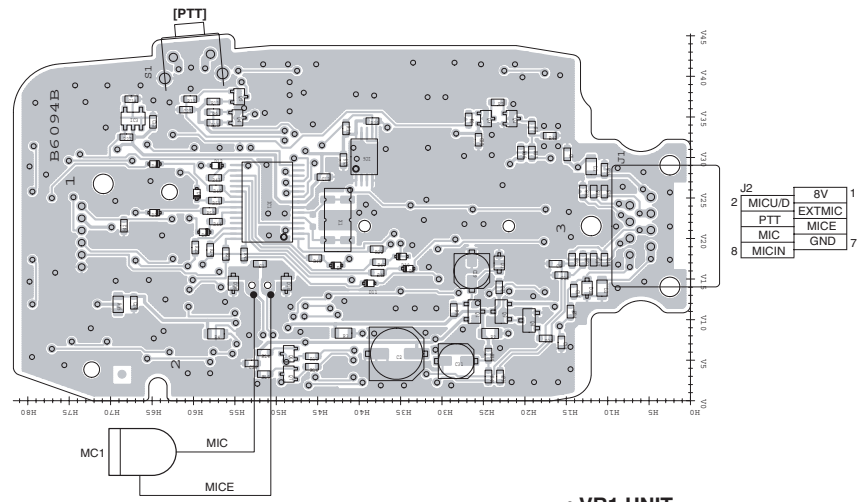


• VR2 UNIT (TOP VIEW)

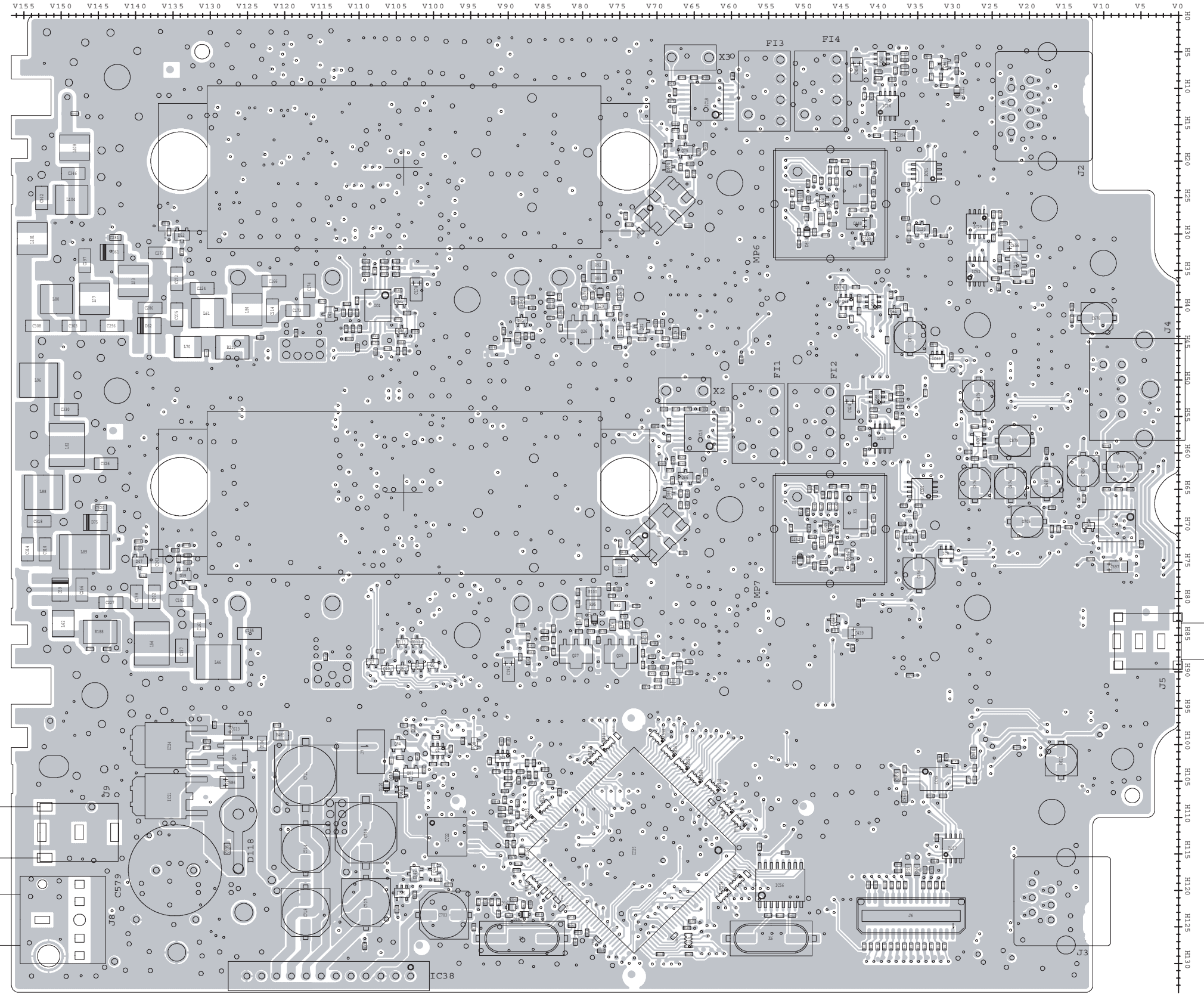


The combination of this side and the bottom side shows the board layout in the same configuration as the actual P.C.Board.

• HM-133 (BOTTOM VIEW)

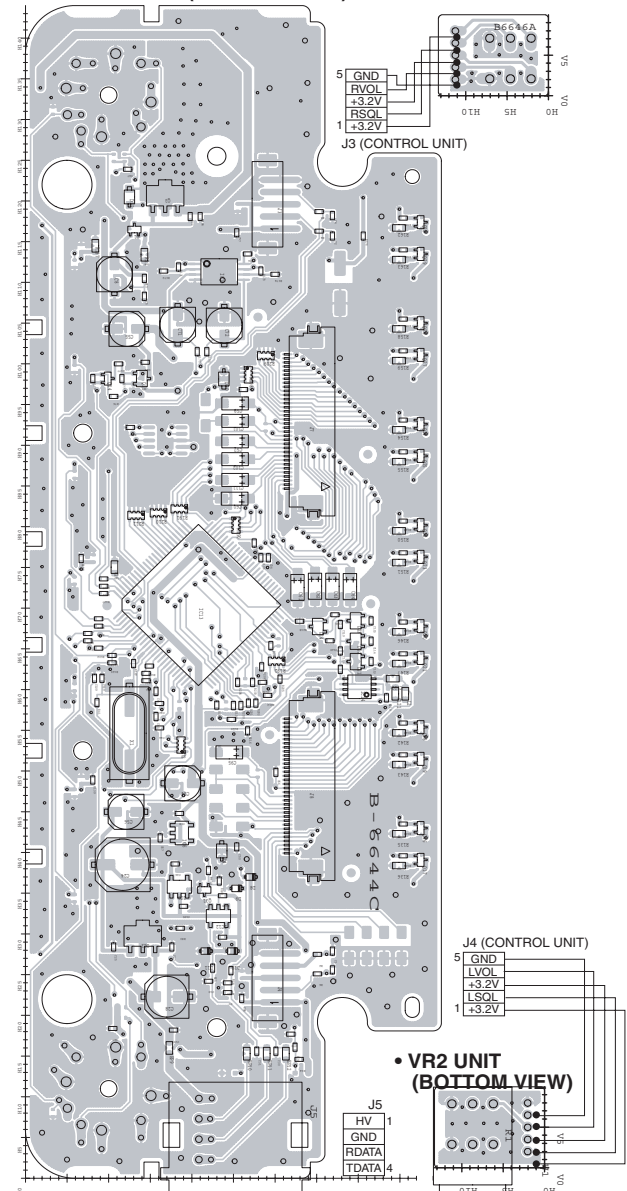


• MAIN UNIT (BOTTOM VIEW)



30	GND	NC	1
29	NC	NC	
28	B7ONE	AMBERXD	
27	D7FOULT	AMBERXD	
26	AF	DVC	
25	D7MCD	AOC	
24	OPV	TRCK	
23	AMBEREP	ROK	
22	AMBEREP	ROK	
21	AMBEREP	ROK	
20	AMBEREP	ROK	
19	AMBEREP	ROK	
18	AMBEREP	ROK	
17	AMBEREP	ROK	
16	AMBEREP	ROK	
15	GND	OPROPT	
	OPSTXDD	OPRESSET	
	OPRSDO	OPRBOOT	

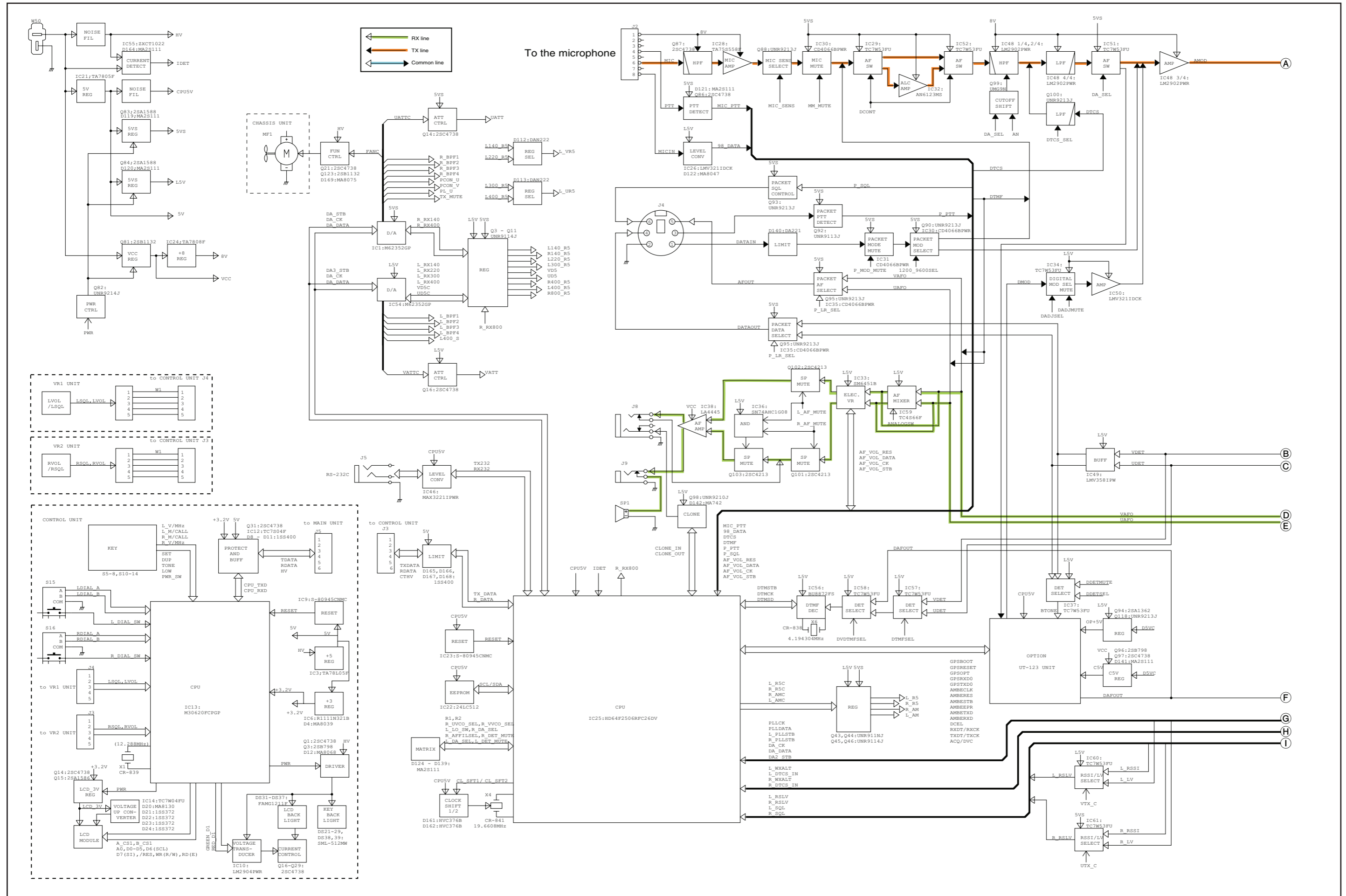
• CONTROL UNIT (BOTTOM VIEW)



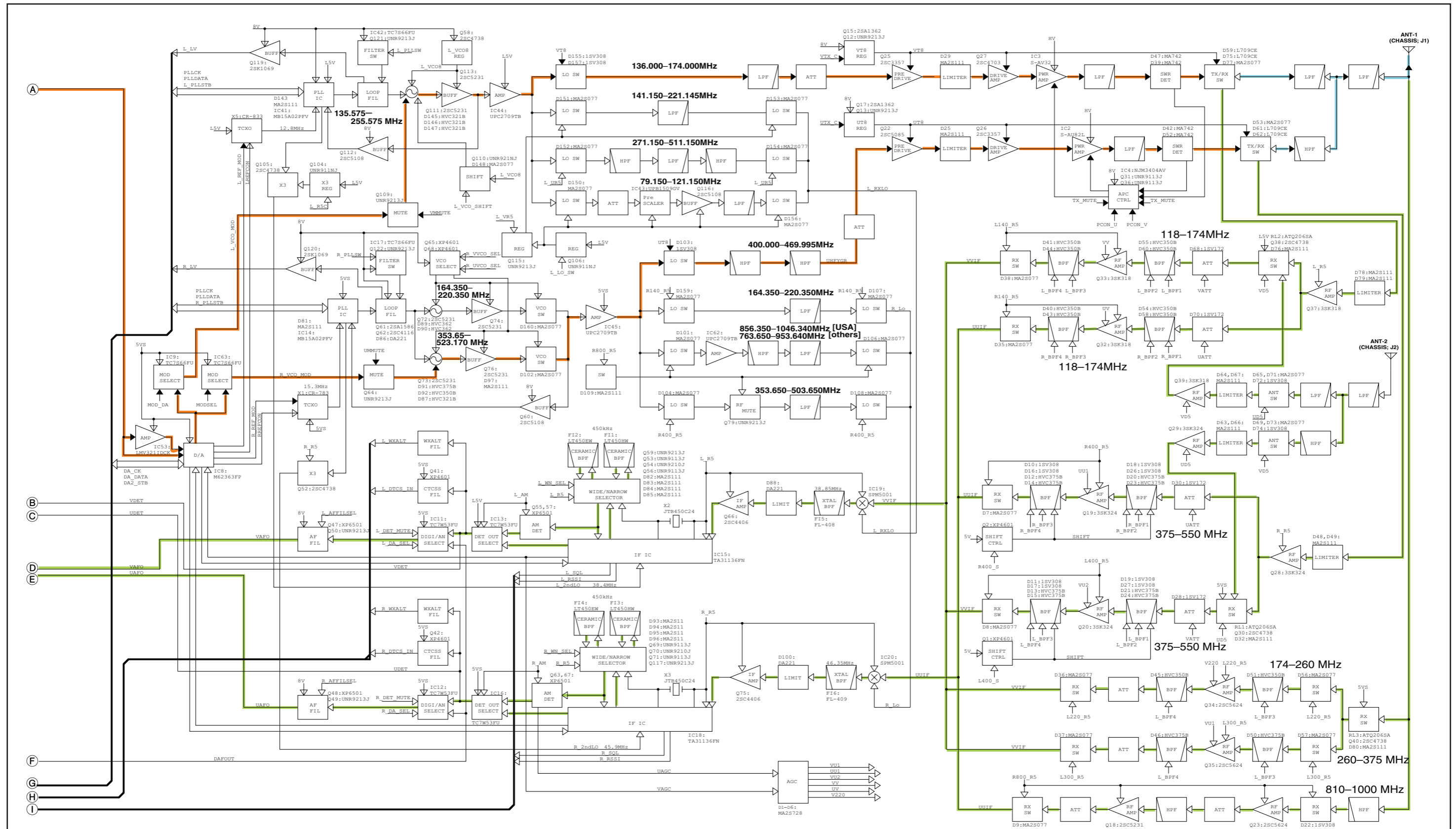
# SECTION 9

# BLOCK DIAGRAM

## • BLOCK DIAGRAM (Left side)



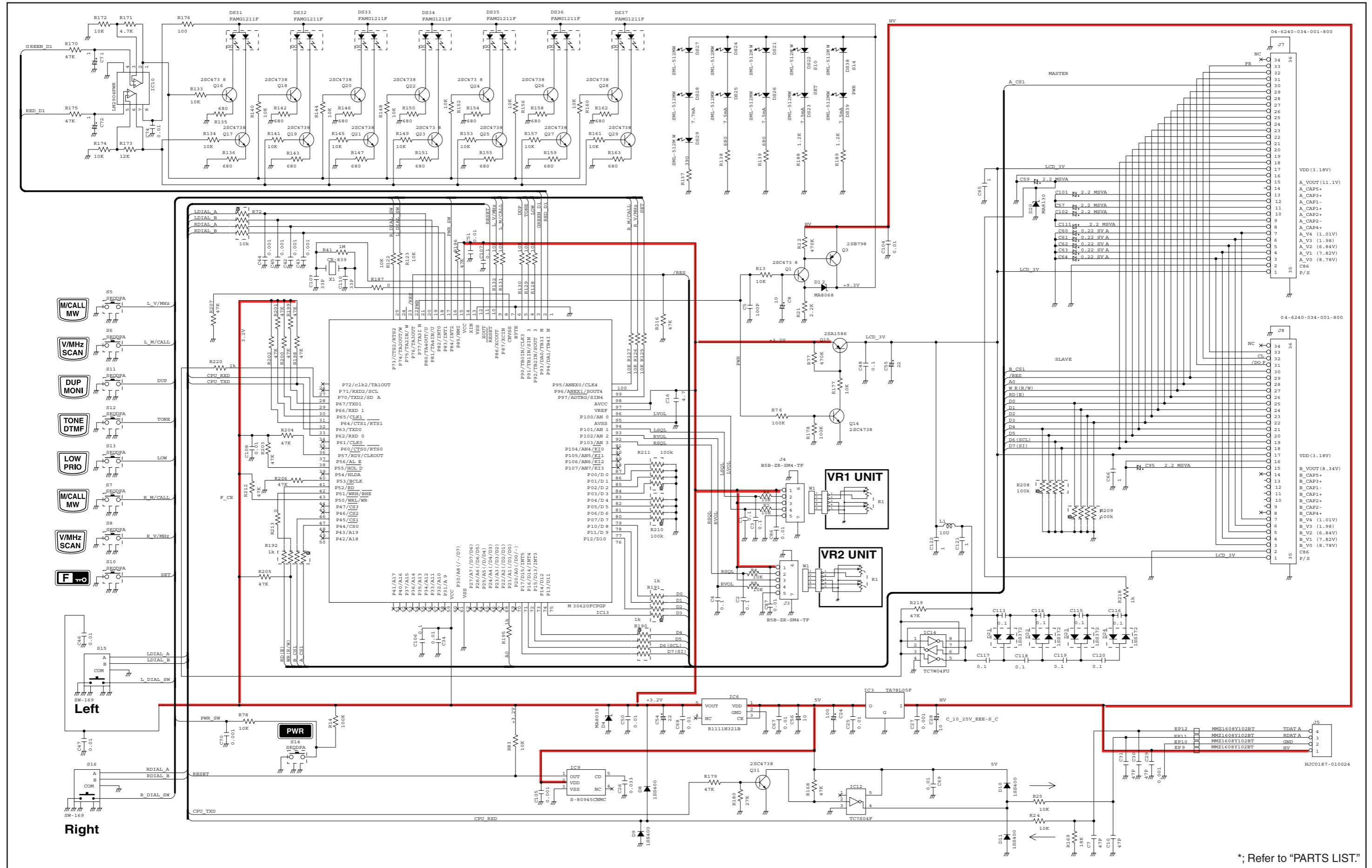
• BLOCK DIAGRAM (Right side)



# SECTION 10

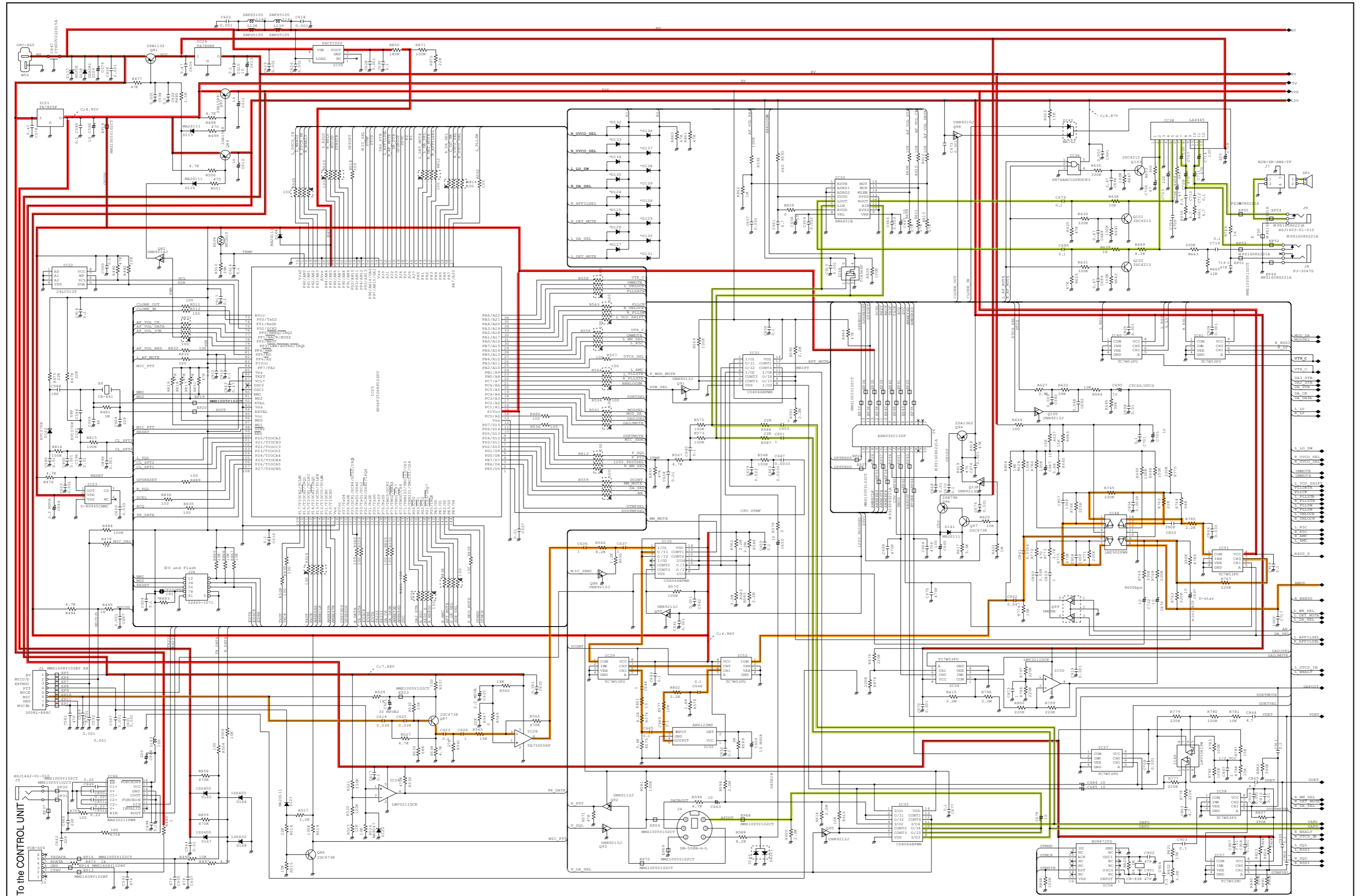
# VOLTAGE DIAGRAM

## 10-1 CONTROL UNIT

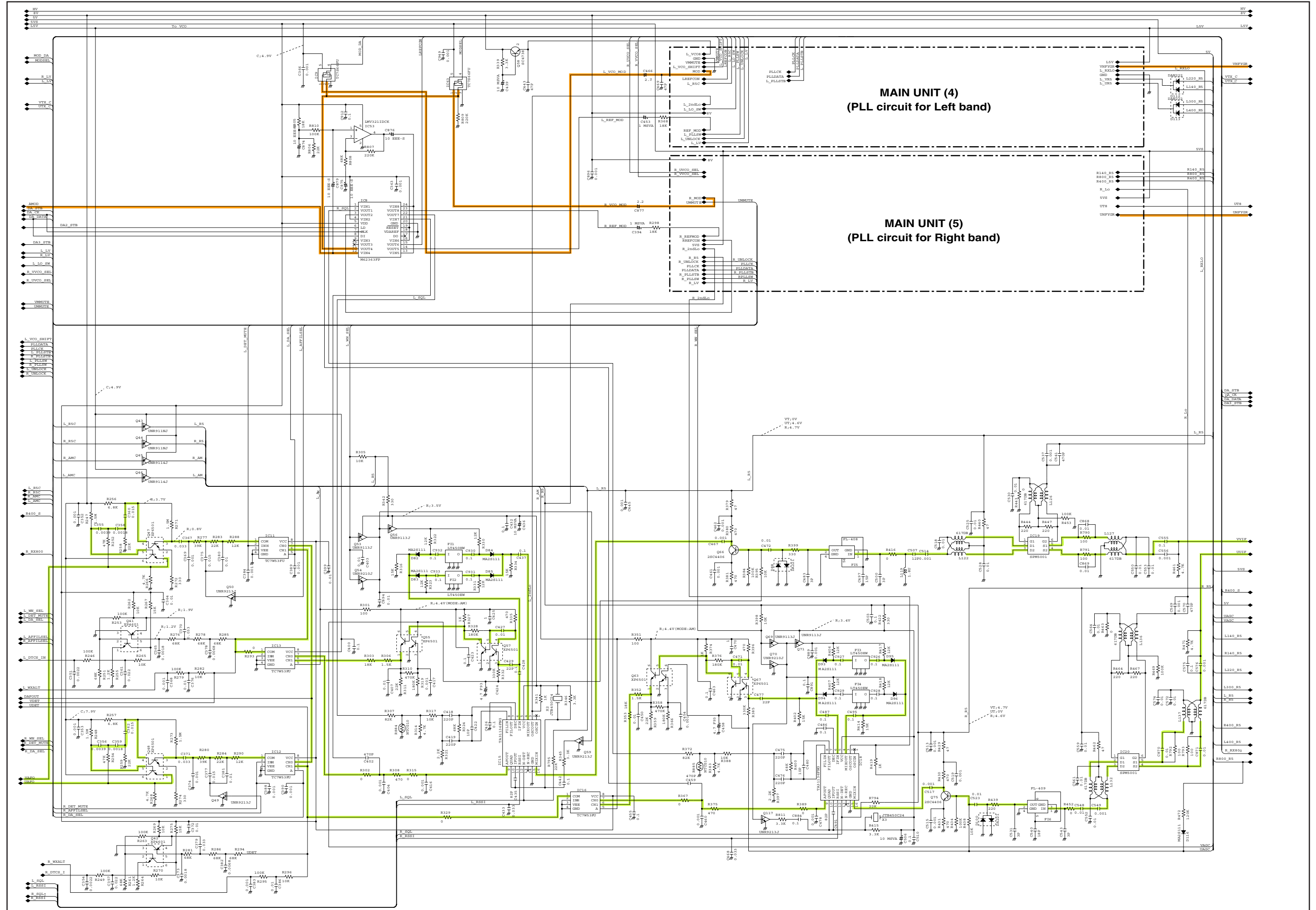


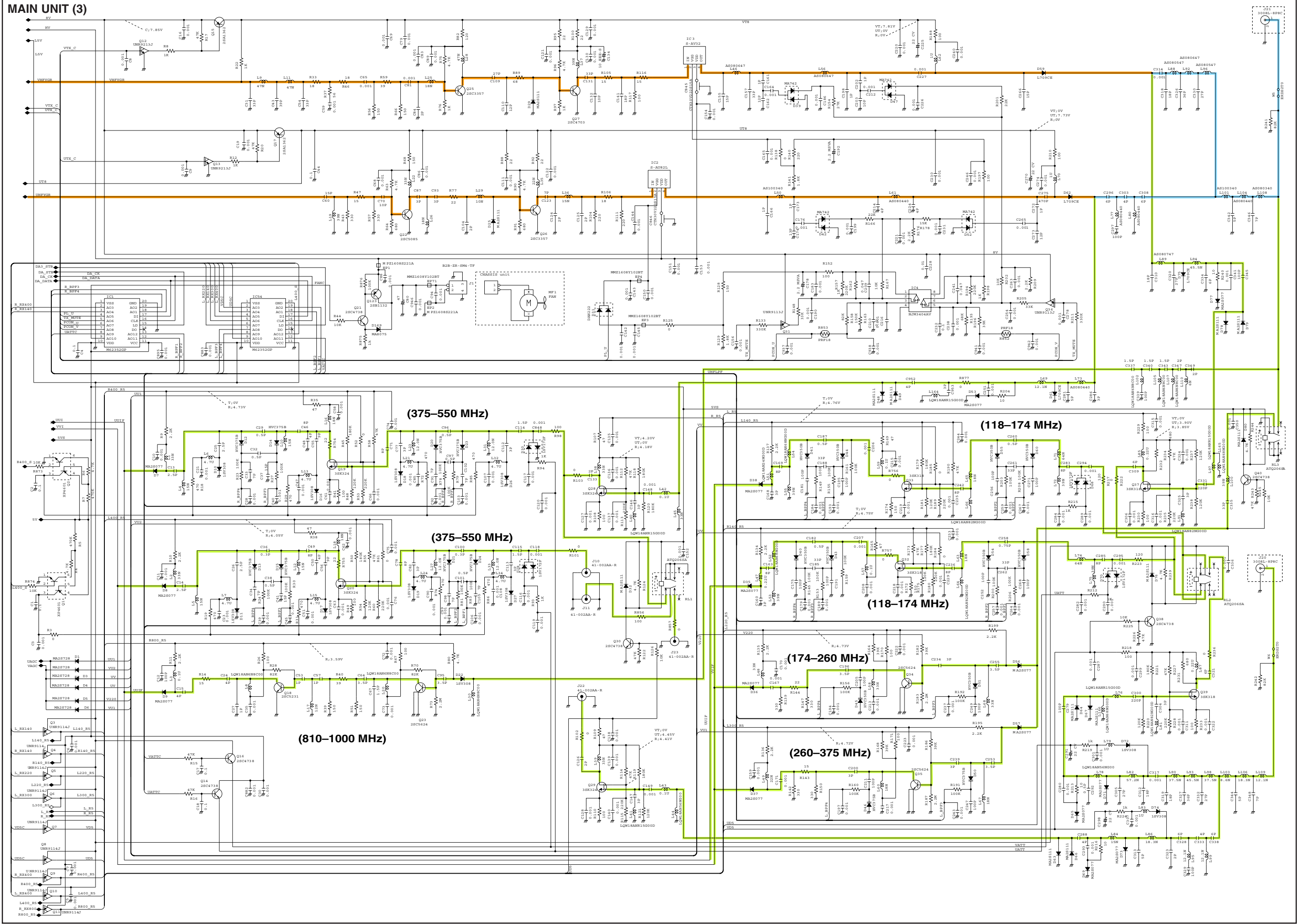
\*; Refer to "PARTS LIST."

10-2 MAIN UNIT (1)



\*; Refer to "PARTS LIST"











# SECTION 11

# HM-133

## • ELECTRICAL PARTS

### [MAIN-A UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1140011491	S.IC uPD789071MC-041-5A4-E1-A	B	51.1/24.5
IC3	1110006310	S.IC BD5245G-TR	B	67.3/34.8
IC6	1130012030	S.IC BR24L02FV-WE2	B	39.4/30.1
Q1	1530001941	S.TR 2SC2712-BL (TE85L,F)	B	26.1/11
Q2	1590000680	S.TR DTC114EUA T106	B	21.6/34.8
Q3	1590001330	S.TR DTA114EUA T106	B	24.7/34.8
Q4	1510000771	S.TR 2SA1586-GR (TE85R,F)	B	54.7/34.9
Q5	1510000771	S.TR 2SA1586-GR (TE85R,F)	B	54.5/37.5
Q6	1510000771	S.TR 2SA1586-GR (TE85R,F)	B	48.5/5.8
Q7	1510000771	S.TR 2SA1586-GR (TE85R,F)	B	48.5/3.3
Q8	1530001941	S.TR 2SC2712-BL (TE85L,F)	B	19.5/9.9
Q9	1590001010	S.TR DTB113ZK T146	B	22.8/11
D1	1790000950	S.ZEN MA8056-M (TX)	B	23.1/17
D3	1750000940	S.DIO ISS400 TE61	B	64.7/23.2
D4	1750000940	S.DIO ISS400 TE61	B	64.7/29.2
D5	1750000940	S.DIO ISS400 TE61	B	59.6/25.5
D6	1750000940	S.DIO ISS400 TE61	B	58.7/20.8
D7	1750000940	S.DIO ISS400 TE61	B	42.8/16.7
D9	1750000940	S.DIO ISS400 TE61	B	34.1/16.3
D10	1750000940	S.DIO ISS400 TE61	B	34.9/17.8
D11	1750000940	S.DIO ISS400 TE61	B	38.8/14.5
D12	1750000940	S.DIO ISS400 TE61	B	57.2/29
D16	1730002280	S.ZEN MA8091-M (TX)	B	55.2/14.5
D17	1730002280	S.ZEN MA8091-M (TX)	B	48.8/14.5
D18	1730002280	S.ZEN MA8091-M (TX)	B	12.5/13.9
X1	6060000610	S.CER EFOS4914E3	B	42.6/22.3
L1	6200001520	S.COL MLF2012D R82K-T	B	12/28.9
L2	6200001520	S.COL MLF2012D R82K-T	B	10.7/13.9
R2	7030000400	S.RES MCR10EZJH 1.5 k	B	24.2/8.3
R3	7030000400	S.RES MCR10EZJH 1.5 k	B	41.9/8.3
R4	7030000400	S.RES MCR10EZJH 1.5 k	B	57.3/8.2
R5	7030003400	S.RES ERJ3GEYJ 471 V (470)	B	28.6/11.2
R6	7030003620	S.RES ERJ3GEYJ 333 V (33 k)	B	26.8/34.7
R7	7030003620	S.RES ERJ3GEYJ 333 V (33 k)	B	23.3/36.8
R8	7030003570	S.RES ERJ3GEYJ 123 V (12 k)	B	19.1/33.7
R9	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	57.6/35.6
R10	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	57.6/34.3
R11	7030003480	S.RES ERJ3GEYJ 222 V (2.2 k)	B	57.6/36.9
R12	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	60.4/37.2
R13	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	45.7/5.5
R14	7030003420	S.RES ERJ3GEYJ 681 V (680)	B	51.5/5.9
R14	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	51.5/5.9
R15	7030003400	S.RES ERJ3GEYJ 471 V (470)	B	51.5/3.3
R15	7030003480	S.RES ERJ3GEYJ 222 V (2.2 k)	B	51.5/3.3
R16	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	45.7/4.2
R18	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	41.6/33.6
R19	7030003640	S.RES ERJ3GEYJ 473 V (47 k)	B	38.4/34.5
R22	7030003520	S.RES ERJ3GEYJ 472 V (4.7 k)	B	37.9/18.7
R23	7030003520	S.RES ERJ3GEYJ 472 V (4.7 k)	B	56.1/18.1
R24	7030003520	S.RES ERJ3GEYJ 472 V (4.7 k)	B	58/18.6
R25	7030003520	S.RES ERJ3GEYJ 472 V (4.7 k)	B	59.8/18.9
R27	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	68.1/32.5
R35	7030000400	S.RES MCR10EZJH 1.5 k	B	69.1/11.9
R36	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	20.5/30.6
R37	7030003460	S.RES ERJ3GEYJ 152 V (1.5 k)	B	19.1/30.6
R38	7030003720	S.RES ERJ3GEYJ 224 V (220 k)	B	17.5/7.7
R39	7030003480	S.RES ERJ3GEYJ 222 V (2.2 k)	B	24.4/5.7
R40	7030003480	S.RES ERJ3GEYJ 222 V (2.2 k)	B	24.4/3
R41	7030003560	S.RES ERJ3GEYJ 103 V (10 k)	B	17/32.7
R42	7030003860	S.RES ERJ3GE JPW V	B	68.4/21.6
R43	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	57.4/27.5
R44	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	57.3/22.1
R45	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	53.9/18
R46	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	37.8/15.8
R47	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	37.6/17.1
R48	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	45.3/17.6
R49	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	57.3/26.2
R50	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	58.1/23.4
R51	7030003440	S.RES ERJ3GEYJ 102 V (1 k)	B	57.4/24.7
C1	4030006850	S.CER C1608 JB 1H 471K-T	B	52/16.9
C2	4510008500	S.ELE EEE1CA101WP	B	35.5/5.8
C5	4030007050	S.CER C1608 CH 1H 220J-T	B	14.9/30.4
C9	4030007050	S.CER C1608 CH 1H 220J-T	B	16.3/16.9
C10	4030007050	S.CER C1608 CH 1H 220J-T	B	15.6/15.5
C11	4030007050	S.CER C1608 CH 1H 220J-T	B	15.6/7.2
C12	4030006860	S.CER C1608 JB 1H 102K-T	B	64.9/34.4
C13	4030006860	S.CER C1608 JB 1H 102K-T	B	44.3/27.6
C14	4030006900	S.CER C1608 JB 1H 103K-T	B	67.5/37.2
C15	4030006860	S.CER C1608 JB 1H 102K-T	B	41.9/29.7
C16	4030006860	S.CER C1608 JB 1H 102K-T	B	14.1/13.6
C17	4030006860	S.CER C1608 JB 1H 102K-T	B	11.7/17.4
C18	4030006860	S.CER C1608 JB 1H 102K-T	B	10.4/17.4
C19	4030006860	S.CER C1608 JB 1H 102K-T	B	13/25.8
C21	4030006860	S.CER C1608 JB 1H 102K-T	B	11.7/25.8

### [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C22	4030006860	S.CER C1608 JB 1H 102K-T	B	10.4/28.5
C23	4030006860	S.CER C1608 JB 1H 102K-T	B	23.1/14
C24	4030006860	S.CER C1608 JB 1H 102K-T	B	67.2/12.1
C25	4030006860	S.CER C1608 JB 1H 102K-T	B	25.6/32.2
C26	4030006860	S.CER C1608 JB 1H 102K-T	B	53/4.6
C27	4030006860	S.CER C1608 JB 1H 102K-T	B	60.9/35.9
C29	4510008540	S.ELE EEE1CA100SR	B	26.4/16
C30	4030011600	S.CER C1608 JB 1E 104K-T	B	23/3
C31	4510008540	S.ELE EEE1CA100SR	B	28.3/4.9
J1	6510023110	CNR 3008L-8P8C <KIN>		
DS1	5010000120	S.LED LN1371G-(TR)	T	21.9/11
DS2	5010000120	S.LED LN1371G-(TR)	T	21.9/32
DS3	5010000120	S.LED LN1371G-(TR)	T	39.3/11
DS4	5010000120	S.LED LN1371G-(TR)	T	39.3/32
DS5	5010000120	S.LED LN1371G-(TR)	T	55.9/2.5
DS6	5010000120	S.LED LN1371G-(TR)	T	56.2/26.8
DS7	5010000120	S.LED LN1371G-(TR)	T	71.7/14.8
DS8	5010000120	S.LED LN1371G-(TR)	T	72.2/33.8
DS10	5010000150	S.LED LT1EP53A	T	51.6/5
DS10	5040003160	S.LED BRPY1211C-TR	T	51.6/5
DS11	5010000150	S.LED LT1EP53A	T	51.6/38
DS11	5040003160	S.LED BRPY1211C-TR	T	51.6/38
MC1	7700002310	MIC EM-140		
S1	2260000980	SW SKHHLPO14A		
EP1	6910012350	S.BEA MMZ1608Y 102BT	B	10.4/25.8
EP2	6910012350	S.BEA MMZ1608Y 102BT	B	14.3/17.4
EP3	6910012350	S.BEA MMZ1608Y 102BT	B	13/17.4
EP4	6910012350	S.BEA MMZ1608Y 102BT	B	14.5/11

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

## • MECHANICAL PARTS

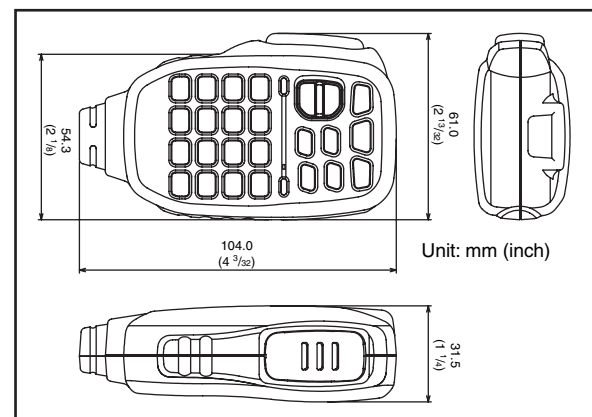
### [CHASSIS PARTS]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900011271	OPC-1153A	1
MP1	8210018830	2539 FRONT PANEL	1
MP2	8210018840	2539 REAR PANEL	1
MP3	8930057380	2539 PTT BUTTON	1
MP4	8930057390	2539 LED LENS	2
MP5	8930057570	2539 SW RUBBER	1
MP6	8930057520	2539 KEYBOARD	1
MP8	8810009371	Screw BT B0 3X12NI-ZK3 (BT)	2
MP9	8810009561	Screw BT B0 2X6 NI-ZK3 (BT)	3

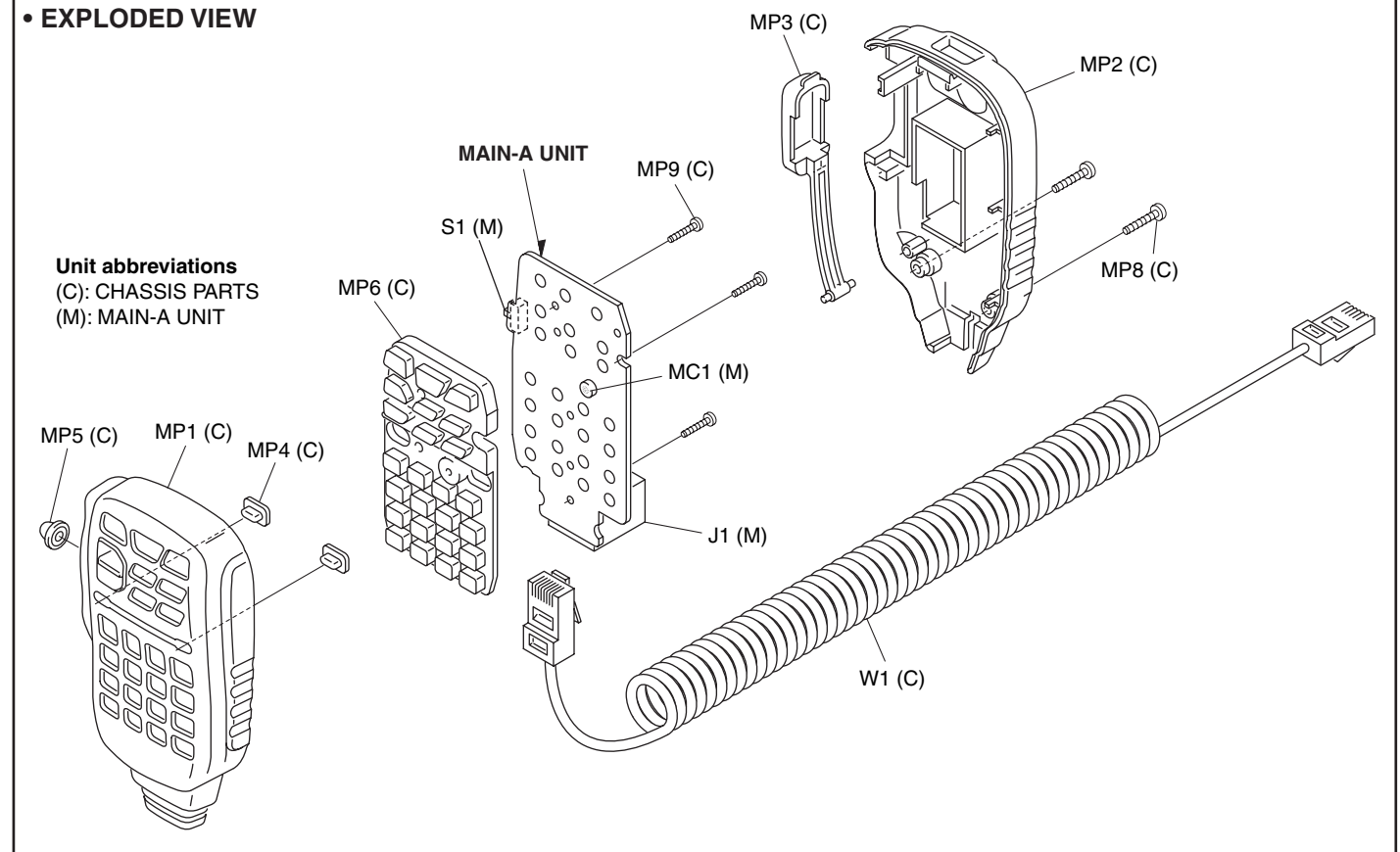
### [MAIN-A UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510023110	3008L-8P8C	1
MC1	7700002310	EM-140	1
S1	2260000980	SKHHLPO14A	1

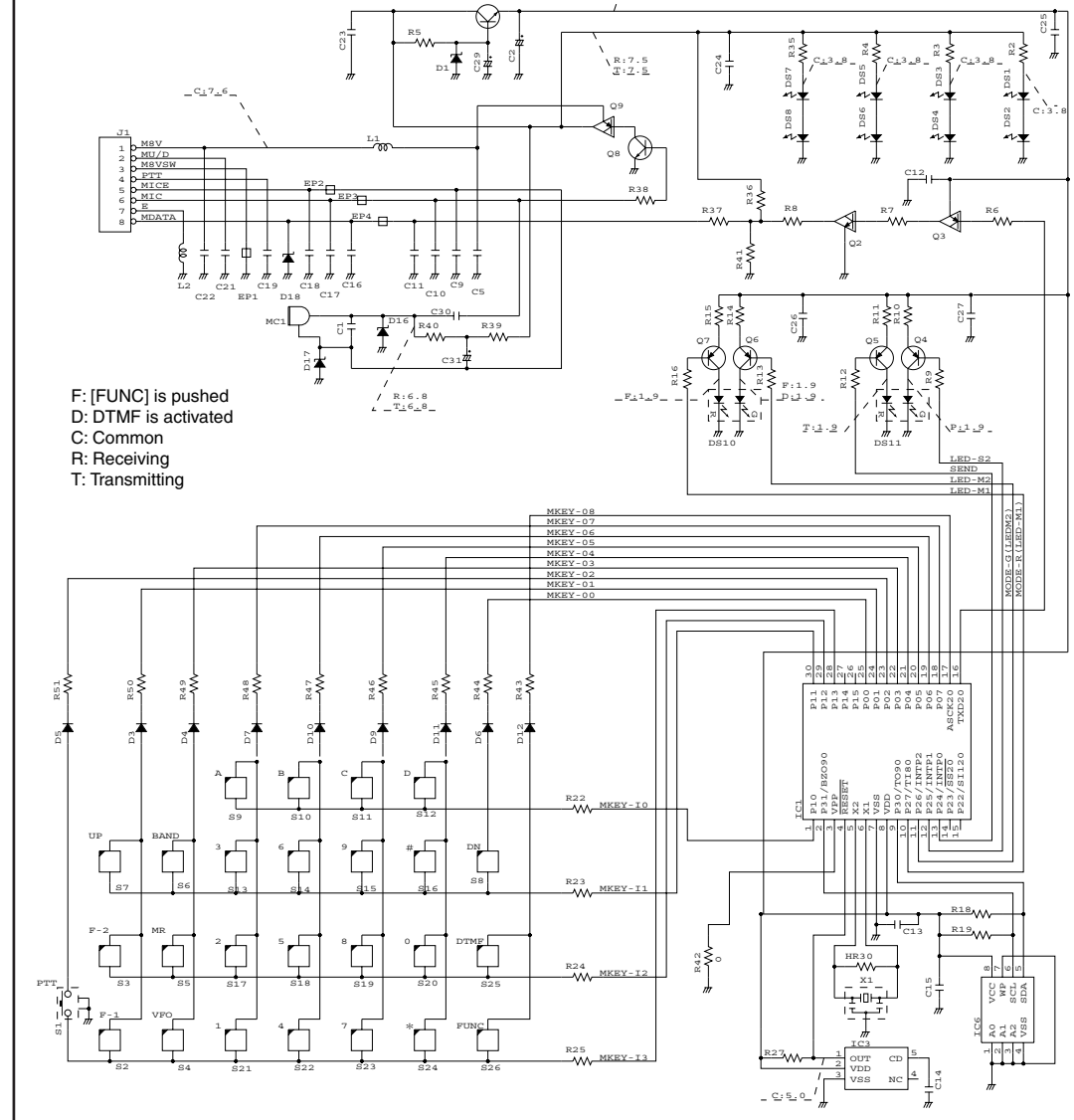
## • DIMENTIONS



## • EXPLODED VIEW

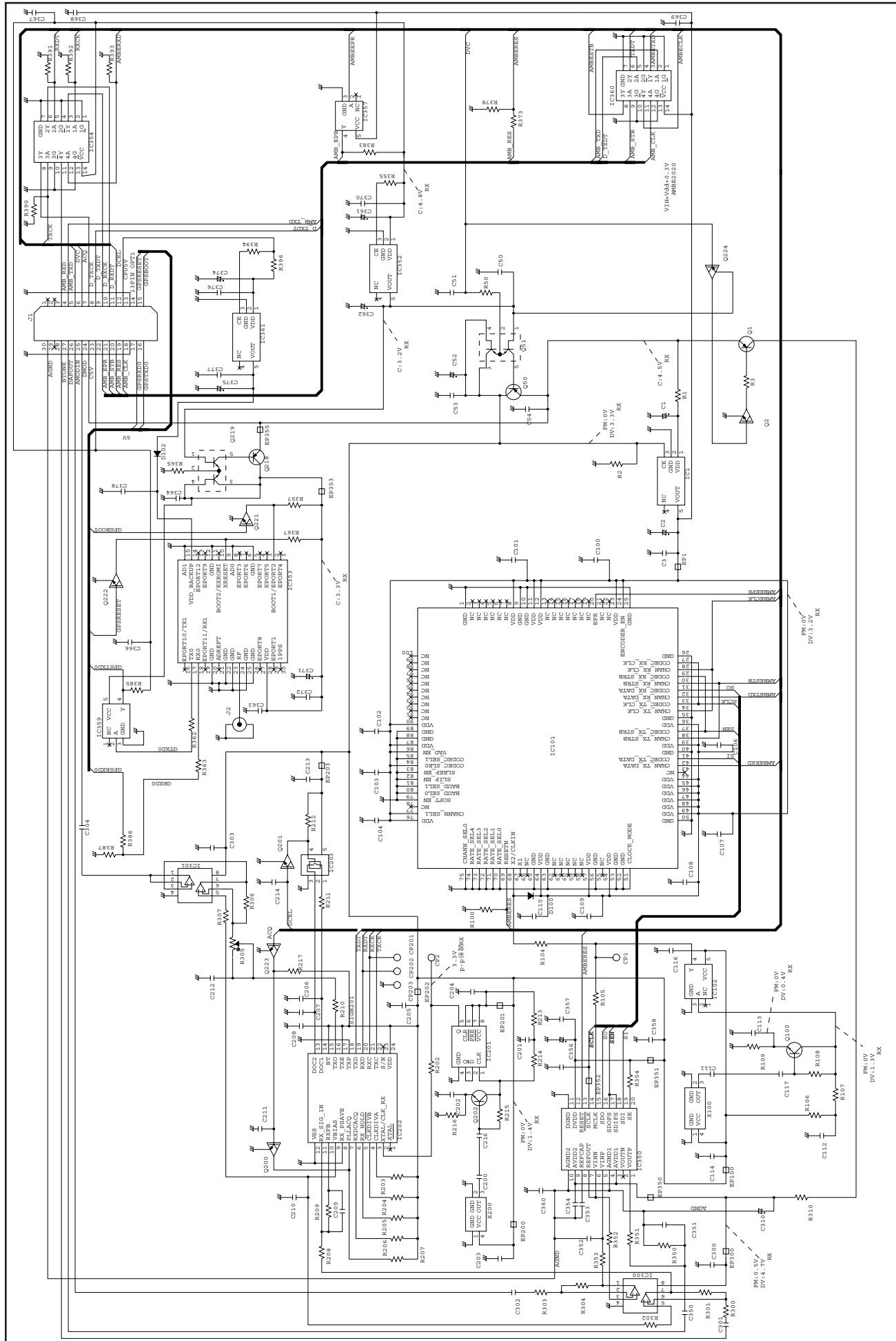


## • VOLTAGE DIAGRAM



# SECTION 12 UT-123 (Optional product)

## • VOLTAGE DIAGRAM



## • PARTS LIST

### [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1180002371	S.REG R1111N321B-TR-F	T	13/6.8
IC101	1130010920	S.IC AMBE-2020	B	9.8/9.5
IC102	1130011930	S.IC SN74LVC1G04DCKR	T	4.7/5.1
IC201	1130013440	S.IC SN74LVC2G74DCTR	T	30.3/12.3
IC202	1110005430	S.IC CMX589AD5	B	37/7.5
IC203	1130007021	S.IC TC7S66FU (TE85L,F)	T	39.6/5.2
IC300	1110005290	S.IC NJM2115V-TE1-#ZZZB	T	28.6/6.3
IC301	1130006921	S.IC TA75W01FU (TE12L,F)	T	35.7/9.1
IC350	1130011631	S.IC AD73311ARSZ	B	24.3/6.4
IC352	1180002371	S.REG R1111N321B-TR-F	B	12.9/26.7
IC353	1190002470	S.IC ITRAX130 -MRF-	B	52.2/36.7
IC354	1130013640	S.IC TC74VHCT125AFK (E,K)	T	2.5/27.2
IC357	1130013570	S.IC SN74LVC1G07DCK	T	18.4/22.7
IC359	1130013570	S.IC SN74LVC1G07DCK	T	18.9/18.2
IC360	1130013650	S.IC TC74VHC125FK (EL,K)	T	17.8/28.8
IC361	1180002371	S.REG R1111N321B-TR-F	T	23.8/20.7
Q1	1510000581	S.TR 2SA1362-GR (TE85R,F)	T	12/15.7
Q2	1590003390	S.TR UNR9215J-(TX)	T	8.4/13.2
Q50	1510000581	S.TR 2SA1362-GR (TE85R,F)	B	3.3/30.7
Q51	1590001170	S.TR XP1501-(TX) .AB	B	7.8/30.1
Q100	1530002280	S.TR 2SC4081 T106 S	T	2.2/7.3
Q200	1590003390	S.TR UNR9215J-(TX)	T	39/11.8
Q201	1590003390	S.TR UNR9215J-(TX)	T	35.5/3.9
Q202	1530002280	S.TR 2SC4081 T106 S	T	26.2/12.8
Q218	1520000561	S.TR 2SB1123 T-TD-E	B	8.6/22.5
Q219	1590001170	S.TR XP1501-(TX) .AB	B	8.1/26.4
Q221	1590003390	S.TR UNR9215J-(TX)	T	6/14.4
Q222	1590003390	S.TR UNR9215J-(TX)	T	5.9/17.4
Q223	1590003390	S.TR UNR9215J-(TX)	T	40.9/10.8
Q224	1590003250	S.TR UNR9115J-(TX)	B	5.2/24.5
D100	1790001240	S.DIO MA2S728-(TX)	T	8.1/2.1
D102	1790001240	S.DIO MA2S728-(TX)	T	27.9/20.1
X100	6050012290	S.S.XTL CR-820 (16.384 MHz)	T	7.9/8.4
X200	6050012300	S.S.XTL CR-821 (9.8304 MHz)	T	21.5/11.8
R1	7030000180	S.RES MCR10EZHZ 22 (220)	T	10.3/12.5
R2	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	10/5.3
R3	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	9.9/15.7
R50	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	7.3/28.3
R100	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	6.3/2.2
R104	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	7/4.1
R105	7030007280	S.RES ERJ2GEJ 331 X (330 )	T	17.1/6.5
R106	7030004980	S.RES ERJ2GEJ 101 X (100 )	T	2.6/3.5
R107	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	2.6/5.1
R108	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	4/7.7
R109	7030004990	S.RES ERJ2GEJ 221 X (220 )	T	1.7/10.3
R202	7030010040	S.RES ERJ2GEJ-JPW	T	32.8/13.6
R203	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	34.7/12.8
R204	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	35.6/13
R205	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	36.5/13.3
R206	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	37.4/13.8
R207	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	39.3/13.3
R208	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	41.1/13.9
R209	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	39.9/13.6
R210	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	31.5/4.1
R211	7030006610	S.RES ERJ2GEJ 394 X (390 k)	T	38.7/3.3
R212	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	40.1/7.6
R213	7030004980	S.RES ERJ2GEJ 101 X (100 )	T	28.1/27.2
R214	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	27.8/11.1
R215	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	26.3/14.6
R216	7030004990	S.RES ERJ2GEJ 221 X (220 )	T	25.6/10.8
R217	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	39.3/14.2
R300	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	22.4/5.9
R301	7030005310	S.RES ERJ2GEJ 124 X (120 k)	T	23.9/6.4
R302	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	23.9/7.6
R303	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	29.5/2.9
R304	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	30.3/3.8
R305	7310004610	S.TRI EVM-2WSX80 B15 (104)	B	31.3/6.7
R306	7030005060	S.RES ERJ2GEJ 333 X (33 k)	T	35.7/5.8
R307	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	33.6/6.4
R310	7030005330	S.RES ERJ2GEJ 100 X (10 )	T	22.9/3
R350	7030005010	S.RES ERJ2GEJ 681 X (680 )	T	25.3/8.8
R351	7030008400	S.RES ERJ2GEJ 182 X (1.8 k)	T	27.5/8.8
R352	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	27.9/3.8
R353	7030004980	S.RES ERJ2GEJ 101 X (100 )	B	29.4/5.8
R354	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	20.6/11.1
R355	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	15.5/26.3
R357	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	7.5/15.4
R362	7030007280	S.RES ERJ2GEJ 331 X (330 )	T	20.2/20.4
R363	7030007280	S.RES ERJ2GEJ 331 X (330 )	T	21.5/18.1
R365	7030005000	S.RES ERJ2GEJ 471 X (470 )	B	10.4/27.3
R367	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	7.5/17
R373	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	16.1/24.1
R378	7030008290	S.RES ERJ2GEJ 183 X (18 k)	T	19/24.9
R383	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	17.5/24.8
R385	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	17.1/18.3
R386	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	16.1/20.8
R387	7030008290	S.RES ERJ2GEJ 183 X (18 k)	T	18/20.1
R390	7030005160	S.RES ERJ2GEJ 105 X (1 M)	T	4.1/30.6
R391	7030005160	S.RES ERJ2GEJ 105 X (1 M)	T	4.4/23.8
R392	7030005160	S.RES ERJ2GEJ 105 X (1 M)	T	1.6/22.4
R393	7030005160	S.RES ERJ2GEJ 105 X (1 M)	T	3/32
R394	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	22.9/23.7
R396	7030004980	S.RES ERJ2GEJ 101 X (100 )	T	24.6/22.8
C1	4550007680	S.TAN TEESVP 0J 226M8R	T	11.9/9.7
C2	4550007600	S.TAN F920J106MPABMA	T	12.7/11.4
C3	4030016930	S.CER ECJ0EB1A104K	T	13.4/12.8
C50	4030017460	S.CER ECJ0EB1E102K	B	13.1/29

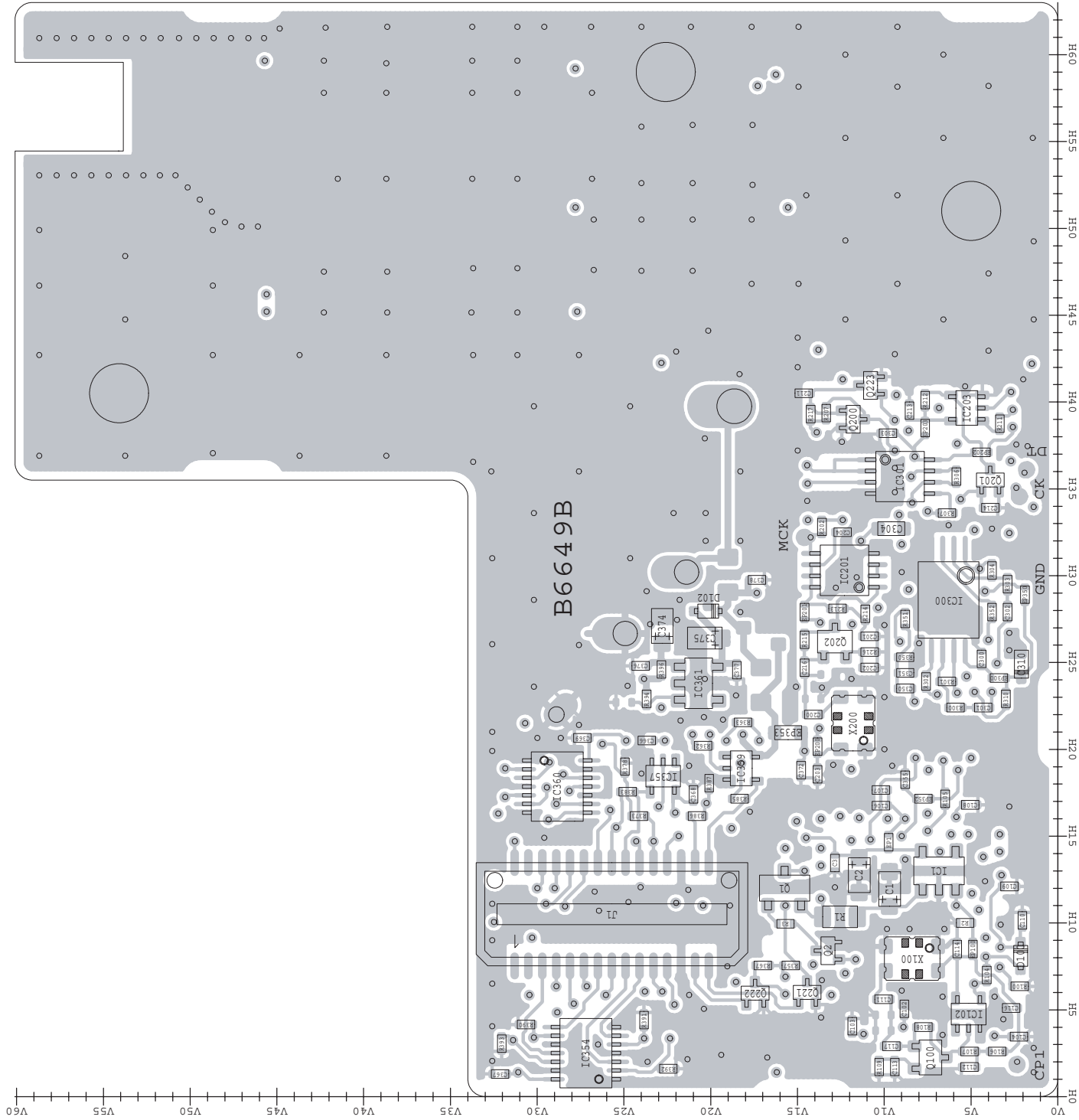
### [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C51	4030017460	S.CER ECJ0EB1E102K	B	4.2/26.4
C52	4550006930	S.TAN TEESVP 0J 225M8R	B	1.8/27.8
C53	4030017460	S.CER ECJ0EB1E102K	B	3.2/28.3
C54	4030017460	S.CER ECJ0EB1E102K	B	4.3/27.6
C100	4030016930	S.CER ECJ0EB1A104K	B	14.8/19.2
C101	4030016930	S.CER ECJ0EB1A104K	B	5.9/19
C102	4030016930	S.CER ECJ0EB1A104K	T	5/8.8
C103	4030016930	S.CER ECJ0EB1A104K	T	4/11.8
C104	4030016930	S.CER ECJ0EB1A104K	T	3.4/2.2
C106	4030016930	S.CER ECJ0EB1A104K	T	16.7/10.2
C107	4030016930	S.CER ECJ0EB1A104K	T	17.6/10.2
C108	4030016930	S.CER ECJ0EB1A104K	T	16.8/5
C109	4030016930	S.CER ECJ0EB1A104K	T	12.1/8.2
C110	4030017420	S.CER ECJ0EC1H470J	T	10.1/2
C111	4030017460	S.CER ECJ0EB1E102K	T	5.6/10
C112	4030016930	S.CER ECJ0EB1A104K	T	1.7/5.1
C113	4030016930	S.CER ECJ0EB1A104K	T	1.7/9.4
C114	4030016930	S.CER ECJ0EB1A104K	T	8.5/5.8
C116	4030016930	S.CER ECJ0EB1A104K	T	5.1/2.7
C117	4030017460	S.CER ECJ0EB1E102K	T	2.9/9.6
C200	4030017460	S.CER ECJ0EB1E102K	T	22/14.1
C201	4030016930	S.CER ECJ0EB1A104K	T	26.5/10.8
C202	4030016930	S.CER ECJ0EB1A104K	T	24.7/10.8
C203	4030016930	S.CER ECJ0EB1A104K	T	18.5/13.8
C204	4030017460	S.CER ECJ0EB1E102K	T	32.5/12.4
C205	4030016930	S.CER ECJ0EB1A104K	B	38.2/1.5
C206	4030017030	S.CER ECJ0EB1A273K	B	39.1/1.5
C207	4030017030	S.CER ECJ0EB1A273K	B	40/1.5
C208	4030016930	S.CER ECJ0EB1A104K	B	33.1/2.1
C209	4030017400	S.CER ECJ0EC1H220J	B	40.1/12.7
C210	4030018860	S.CER ECJ0EB0J105K	B	38.7/12.8
C211	4030017460	S.CER ECJ0EB1E102K	T	40.5/14.6
C212	4030017760	S.CER ECJ0EB1H222K	B	31.1/2.9
C213	4030016930	S.CER ECJ0EB1A104K	T	39.5/8.5
C214	4030017460	S.CER ECJ0EB1E102K	T	33.9/3.9
C216	4030017460	S.CER ECJ0EB1E102K	T	24.7/14.6
C300	4030016930	S.CER ECJ0EB1A104K	T	25.2/4.4
C301	4030018860	S.CER ECJ0EB0J105K	T	22.4/4.3
C302	4030016930	S.CER ECJ0EB1A104K	T	27.9/2.9
C303	4030016930	S.CER ECJ0EB1A104K	T	38.2/9.8
C304	4030017490	S.CER C1608 JB 1A 105K-T	T	32.7/9.6
C310	4550007730	S.TAN TEESVP 0J 106M8R	T	24.9/2.1
C350	4030016930	S.CER ECJ0EB1A104K	T	23.5/8.8
C351	4030016970	S.CER ECJ0EB1C223K	T	24.4/8.8
C352	4030016950	S.CER ECJ0EB1A473K	B	29.4/7.4
C353	4030016930	S.CER ECJ0EB1A104K	T	30.2/3.1
C354	4030016930	S.CER ECJ0EB1A104K	B	29.3/3.1
C355	4030017420	S.CER ECJ0EC1H470J	T	18.2/8.8
C356	4550006930	S.TAN TEESVP 0J 225M8R	B	23.9/11.1
C357	4030016930	S.CER ECJ0EB1A104K	B	22/12.8
C358	4030016930	S.CER ECJ0EB1A104K	B	20.6/12
C360	4030017460	S.CER ECJ0EB1E102K	B	27.8/2.2
C361	4550007090	S.TAN TEESVA 1A 226M8R	B	15.8/29.3
C362	4550007600	S.TAN F920J106MPABMA	B	10.1/30.3
C363	4030016970	S.CER ECJ0EB1C103K	B	59.8/46.7
C364	4030016970	S.CER ECJ0EB1C103K	B	10.4/25.6
C366	4030016970	S.CER ECJ0EB1C103K	T	20.5/23.7
C367	4030016970	S.CER ECJ0EB1C103K	T	1.3/32.1
C368	4030016970	S.CER ECJ0EB1C103K	T	17.4/21
C369	4030016970	S.CER ECJ0EB1C103K	T	20.6/27.4
C370	4030016970	S.CER ECJ0EB1C103K	B	13.7/30
C371	4550006930	S.TAN TEESVP 0J 225M8R	B	56.9/16.2
C372	4030016970	S.CER ECJ0EB1C103K	T	18.8/14.8
C374	4550007600	S.TAN F920J106MPABMA	T	27.1/22.8
C375	4550007600	S.TAN F920J106MPABMA	T	26.4/20.3
C376	4030016970	S.CER ECJ0EB1C103K	T	24.8/24
C377	4030016970	S.CER ECJ0EB1C103K	T	24.5/18.5
C378	4030017460	S.CER ECJ0EB1E102K	T	29.7/17.3
J1	6510018440	S.CNR AXN430C330P	T	10.5/25.7
J1	6510025790	S.CNR AXN430C030S	T	10.5/25.7
EP1	6910018460	S.BEA MMZ1005Y102C-T	T	14.6/9.7
EP100	6910018460	S.BEA MMZ1005Y102C-T	T	8.5/4.9
EP200	6910018460	S.BEA MMZ1005Y102C-T	T	20.1/13.8
EP201	6910018460	S.BEA MMZ1005Y102C-T	T	27.9/14.6
EP202	6910018460	S.BEA MMZ1005Y102C-T	T	37.1/4.4
EP203	6910018460	S.BEA MMZ1005Y102C-T	T	38.5/7.6
EP300	6910018460	S.BEA MMZ1005Y102C-T	T	24.1/3.4
EP350	6910018460	S.BEA MMZ1005Y102C-T	T	28.9/1.9
EP351	6910018460	S.BEA MMZ1005Y102C-T	B	21.8/11.6
EP352	6910018460	S.BEA MMZ1005Y102C-T	T	17.1/7.7
EP353	6910014690	S.BEA MPZ1608S221A-T	T	20.9/15.5
EP355	6910014690	S.BEA MPZ1608S221A-T	B	12.5/23

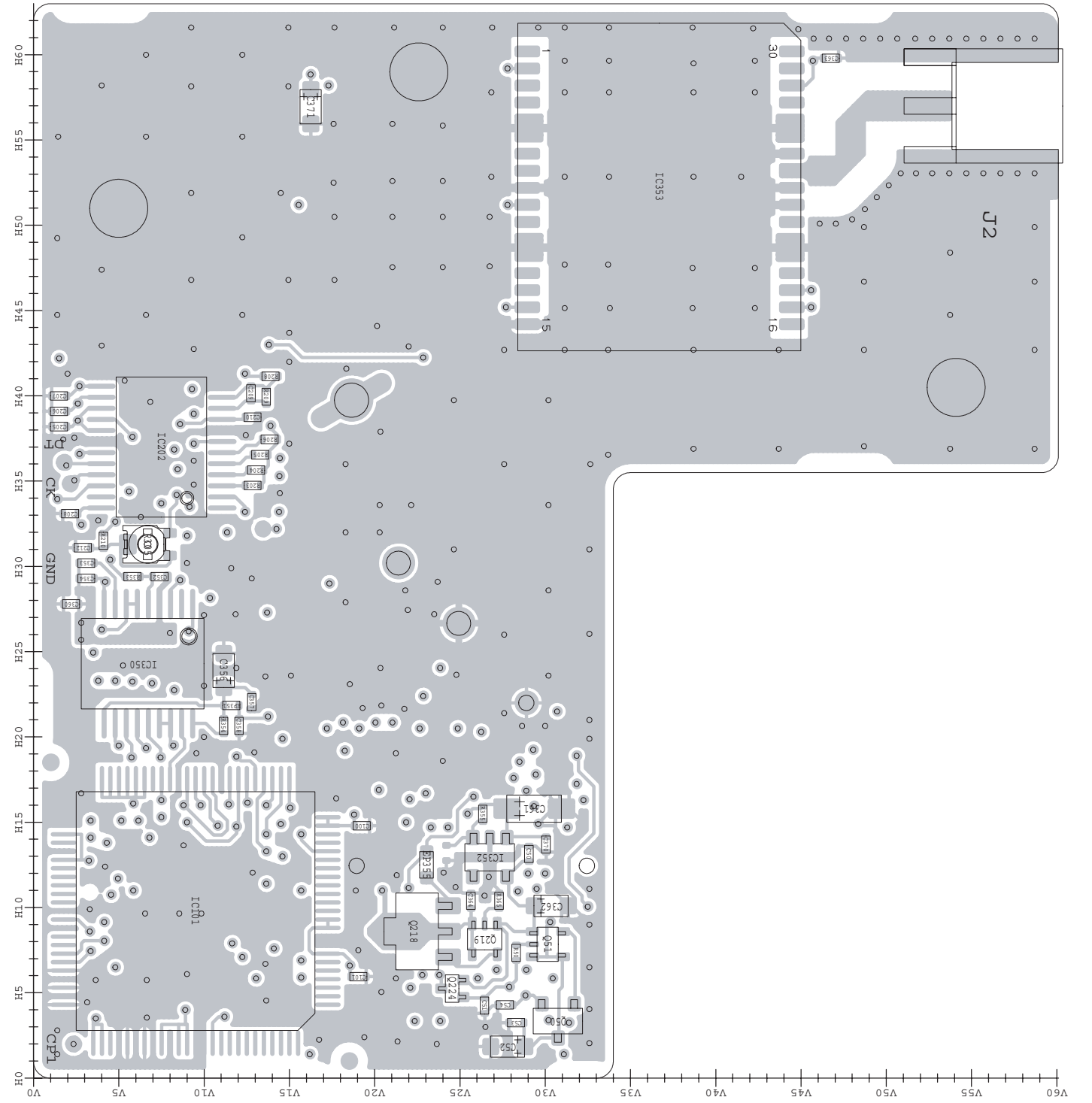
M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)  
S.=Surface mount

• BOARD LAYOUTS

• MAIN UNIT (TOP VIEW)



• MAIN UNIT (BOTTOM VIEW)



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