



# SERVICE MANUAL

VHF AIR BAND TRANSCEIVER

# IC-A14 IC-A14S

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S-14417XZ-C1  
Jan. 2008

## INTRODUCTION

This service manual describes the latest service information for the **IC-A14** and **IC-A14S** VHF AIR BAND TRANSCEIVER at the time of publication.

MODEL	VERSION	KEY TYPE
IC-A14	[USA]	Full key
	[USA-01]	
	[EXP]	
	[EXP-01]	
IC-A14S	[USA]	Simple key
	[USA-01]	
	[EXP]	
	[EXP-01]	

### UNIT ABBREVIATIONS:

C=CHASSIS PARTS  
M=MAIN UNIT  
P=PA UNIT  
DC=DC UNIT  
A=ANT UNIT

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

## CAUTION

**NEVER** connect the transceiver to an AC outlet or to a DC power supply that uses more than specified. 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. This could damage the transceiver's front-end.

## ORDERING PARTS

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

- 10-digit Icom parts numbers
- Component name
- Equipment model name and unit name
- Quantity required

### <ORDER EXAMPLE>

1110003491 S.IC TA31136FNG IC-A14 MAIN UNIT 5 pieces  
8820001210 Screw 2438 screw IC-A14 Top cover 10 pieces

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



## REPAIR NOTES

1. Make sure the problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a Standard Signal Generator or a Sweep Generator.
7. **ALWAYS** connect a 50 dB to 60 dB attenuator between the transceiver and a Deviation Meter or Spectrum Analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting a test equipment to the transceiver.

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**CONTENTS**

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

4-1	RECEIVER CIRCUITS.....	4-1
4-2	TRANSMITTER CIRCUITS.....	4-3
4-3	FREQUENCY SYNTHESIZER CIRCUITS.....	4-4
4-4	PORT ALLOCATIONS.....	4-5
4-5	VOLTAGE BLOCK DIAGRAM.....	4-6

**SECTION 5 PARTS LIST****SECTION 6 MECHANICAL PARTS****SECTION 7 BOARD LAYOUTS****SECTION 8 BLOCK DIAGRAM****SECTION 9 VOLTAGE DIAGRAM**

MAIN UNIT (Left side).....	9-1
MAIN UNIT (Center).....	9-2
MAIN UNIT (Right side).....	9-3
DC, PA AND ANT UNITS.....	9-4

**SECTION 1****SPECIFICATIONS****General**

- Frequency coverage :
 

IC-A14	TX	118.000 to 136.975 MHz
	RX	108.000 to 136.975 MHz
	WX (Rx only)	161.650 to 163.275 MHz
IC-A14S	TX/RX	118.000 to 136.975 MHz
- Mode : 6K00A3E  
16K0G3E (IC-A14/Rx only)
- Channel spacing : 25 kHz
- Number of memory channels:
 

IC-A14	200 (20 CH × 10 BANKS)
IC-A14S	100
- Power supply requirement : Specified Icom's battery packs  
7.4 V DC standard
- Usable temperature range : -10°C to +60°C (+14°F to +140°F)
- Current drain (at 7.4 V DC):
 

Tx	1.5 A
Rx at stand by	50 mA typical
at AF max.	500 mA
- Antenna connector : BNC 50 Ω (nominal)
- Dimensions : 53(W) × 120(H) × 36.9(D) mm  
(projections not included) 2<sup>3</sup>/<sub>32</sub>(W) × 4<sup>23</sup>/<sub>32</sub>(H) × 1<sup>9</sup>/<sub>16</sub>(D) inch
- Weight : Approx. 180 g (6.35 oz) (Without the battery pack and antenna.)

**Transmitter**

- Output power : 5.0 W (PEP) typical  
1.5 W (CW)
- Modulation : Low level modulation
- Modulation limiting : 70 to 100%
- Frequency stability : ±5 ppm
- Audio harmonic distortion : Less than 10% (at 60% mod.)
- Hum and noise ratio : More than 35 dB
- Spurious emissions : More than 46 dB (except operating frequency ±62.5 kHz range)
- External MIC connector : 3-conductor 2.5(d) mm (1/10")/150 Ω

**Receiver**

- Receive system : Double conversion superheterodyne
- Intermediate frequencies : 1st 46.35 MHz, 2nd 450 kHz
- Sensitivity :
 

COM band (6 dB S/N)	-6 dBμ typical
NAVI band (6 dB S/N)	-3 dBμ typical (IC-A14 only)
WX channels (12 dB SINAD)	-13 dBμ typical (IC-A14 only)
- Squelch sensitivity : AM Less than 0 dBμ  
(threshold) FM Less than -5 dBμ  
(IC-A14 only)
- Selectivity : 6 dB (More than 7.5 kHz)  
60 dB (Less than 25 kHz)
- Spurious response rejection: AM More than 60 dB  
FM More than 30 dB  
(IC-A14 only)
- Audio output power : More than 700 mW (internal SP)  
(at 10% distortion with an 8 Ω load, 30% mod.) More than 500 mW (external SP)
- Hum and noise : More than 35 dB at 30% mod.
- External SP connector : 3-conductor 3.5 (d) mm (1/8")/8 Ω

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

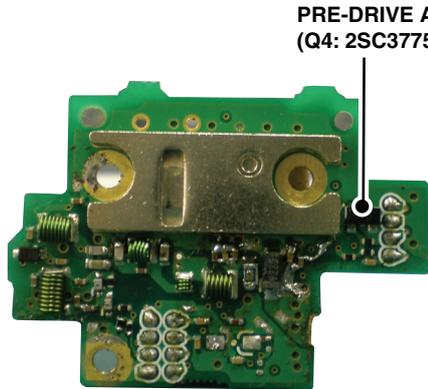
**SECTION 2**

**INSIDE VIEWS**

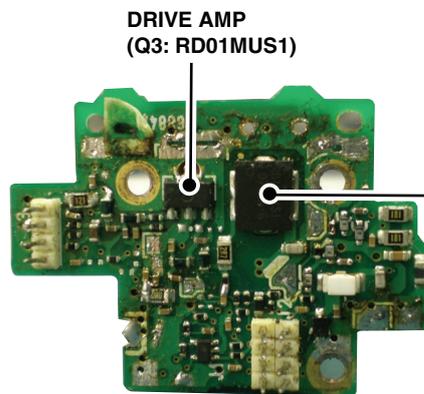
• PA UNIT

(TOP VIEW)

(BOTTOM VIEW)



PRE-DRIVE AMP  
(Q4: 2SC3775)



DRIVE AMP  
(Q3: RD01MUS1)

POWER AMP  
(Q2: RD12MVS1)

• MAIN UNIT

(TOP VIEW)

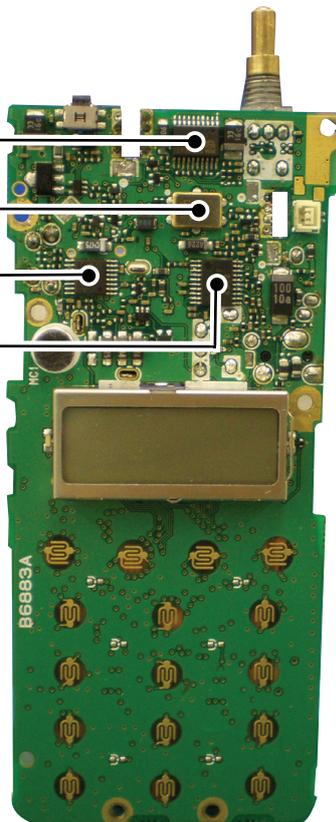
(BOTTOM VIEW)

AF POWER AMP  
(IC31: TDA8547TS)

1st IF FILTER  
(FI3: FL-417)

PLL IC  
(IC29: MB15E03SL)

IF IC  
(IC1: NJM2552V)



DISCRIMINATOR  
(X4: JTBM450CX24)

TX and RX VCOs

AF AMP/FILTER  
(IC18: LMV324IPW)

DAC (IC17: M62363FP)

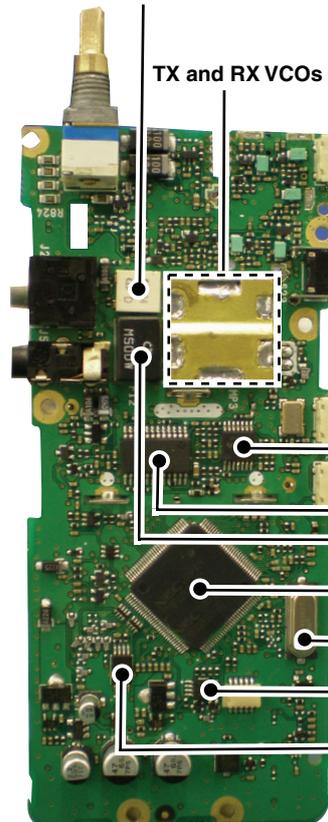
2nd IF FILTER  
(FI2: CFWM450D)

CPU  
(IC26: uPD780338)

CPU CLOCK  
(X3: CR-867)

DATA I/O INVERTER  
(IC33: TC7W04FU)

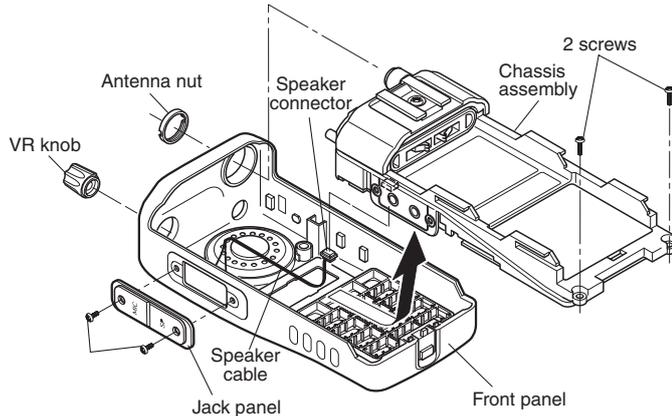
EEPROM  
(IC25: S-24CS64A0I)



## SECTION 3 DISASSEMBLY INSTRUCTION

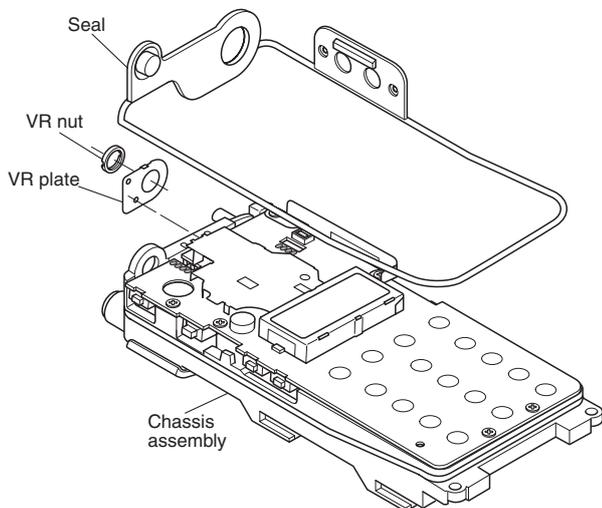
### 1. Removing the front panel

- ① Remove the VR knob and antenna nut.
- ② Unscrew 2 screws from the bottom.
- ③ Unscrew 2 screws from the side, and remove the jack panel.
- ④ Take off the CHASSIS assembly in direction of the arrow until the speaker cable appears.
- ⑤ Disconnect the speaker connector from the CHASSIS assembly, and separate the front panel and CHASSIS assembly completely.



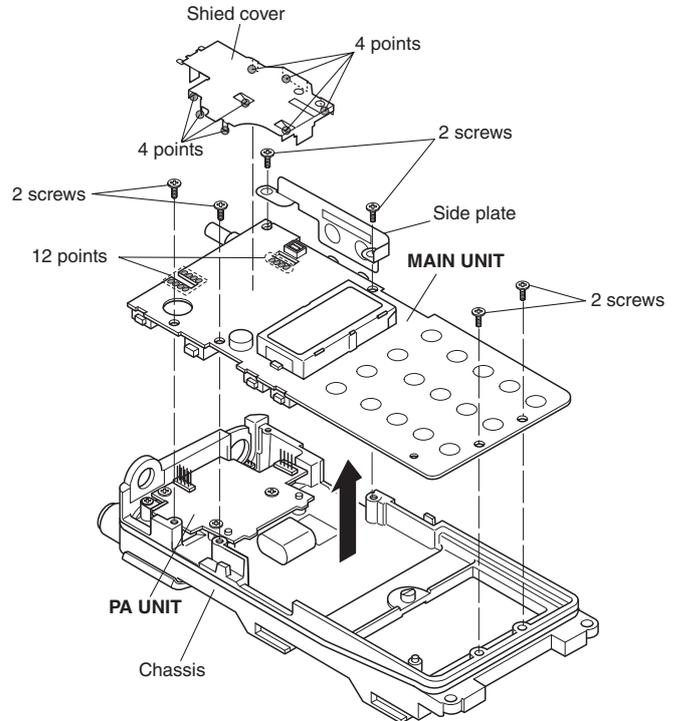
### 2. Removing the MAIN UNIT

- ① Remove the seal, VR nut and VR plate from the CHASSIS assembly.



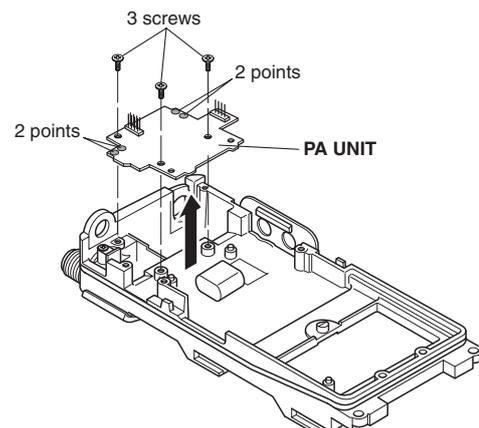
(Continued to right above)

- ② Unsolder total of 8 points from the shield cover then remove it.
- ③ Unscrew 2 screws from the side plate then remove it.
- ④ Unscrew total of 4 screws from the MAIN UNIT.
- ⑤ Unsolder total of 12 points which connecting PA UNIT, then remove the MAIN UNIT from the CHASSIS.



### 3. Removing the PA UNIT

- ① Unscrew 3 screws from the PA UNIT.
- ② Unsolder total of 4 points then remove the PA UNIT from the CHASSIS.



# SECTION 4 CIRCUIT DESCRIPTION

## 4-1 RECEIVER CIRCUITS

### RF CIRCUITS

RF circuits consist of RF filters, antenna switch (ANT SW), RF amplifier (RF AMP), etc., and extracts and amplifies the signals of frequency which desired to receive.

The received signals (RX signals) from the antenna are entered to the ANT UNIT and passed through the LPF. The filtered RX signals are entered to the PA UNIT, and passed through the LPF and ANT SW (an LPF in RX), then entered to the MAIN UNIT.

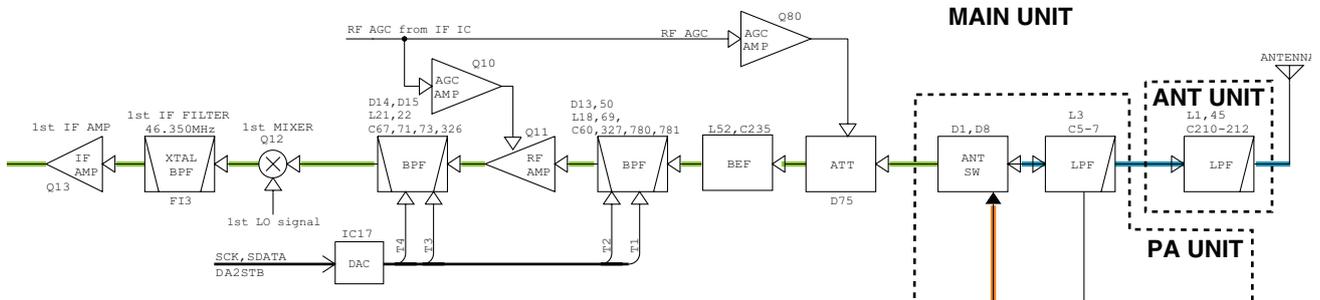
The RX signals from the PA UNIT are passed through the attenuator (ATT), BEF and 2-staged tuned BPF, then applied to the RF AMP (Q11). The amplified RX signals are passed through another 2-staged tuned BPF, and applied to the 1st mixer (Q12).

The ANT SW toggles RX line and TX line. While receiving, the TX line and the antenna is disconnected to prevent RX signals entering. The RX line is disconnected from the GND simultaneously, and an LPF which guides received signals to the RX circuits is composed.

While transmitting, serial-connected PIN diodes are ON, thus the TX line is connected to the antenna, and the RX line is connected to the GND simultaneously to prevent transmit signal entering.

The ATT functions as a part of the AGC circuit. The AGC voltage which is applied to the PIN diodes of the ATT controls RX signal level to enter the RX circuits, to keep the demodulated AF signal level stable.

### • RF AND 1ST IF CIRCUITS



### 2ND IF AND DEMODULATOR CIRCUITS

The 2nd IF circuit consists of 2nd mixer, 2nd IF filter, 2nd IF amplifier. And it converts the 1st IF signal into the 2nd IF signal, then filters and amplifies 2nd IF signal only. And the demodulator circuit converts the 2nd IF signal to AF signals. IC1 is an IF IC which contains the whole of the 2nd IF and demodulator circuits for the both of AM and FM demodulation.

The amplified 1st IF signal from the 1st IF AMP is applied to the IF IC, and converted into the 2nd IF signal, by being mixed with the 45.9 MHz 2nd LO signal at internal 2nd mixer.

The 2nd LO signal is generated by PLL IC (IC29) and X5, and tripled by Q84 before being applied to the 2nd mixer.

### • AM signals

The converted 2nd IF signal is filtered by external 2nd IF filter (FI2), and amplified by the internal 2nd IF AMP. The amplified 2nd IF signal is AM-demodulated by internal AM detector, then output from pin 14.

The demodulated AF signals are applied to the RX AF circuits via the ANL (Automatic Noise Limiter) circuit which reduces pulse-type noises, if the ANL function is activated.

The tuned-BPF is adjusted so that it responds to receiving frequency and rejects all others, by the variable capacitor whose capacitance is varied by applied tuning voltages; "T1 -T4."

The RF AMP amplifies RX signals to a level suited to the 1st mixer.

### 1ST IF CIRCUITS

The 1st IF circuits consist of 1st mixer, 1st IF filter and 1st IF amplifier. And it converts the RX signals into the 1st IF signal, then filters to remove unwanted signals and amplifies.

The filtered RX signals are applied to the 1st mixer to be converted into the 46.35 MHz 1st IF signal, by being mixed with the 1st Local Oscillator (LO) signals from the RX VCO via buffers (Q60 and Q28), LO SW (D17) and ATT (R63, 335, 336).

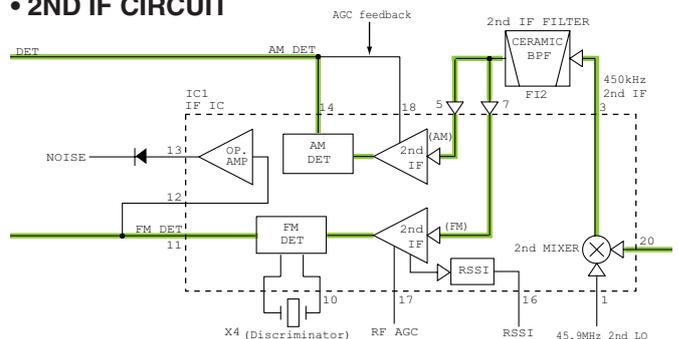
The converted 1st IF signal is passed through the 1st IF filter (FI3) to be removed unwanted signals, and amplified by the 1st IF AMP (Q13). The amplified 1st IF signal is then applied to the 2nd IF circuit.

### • FM (Weather Alert) signals

The converted 2nd IF signal is filtered by external 2nd IF filter (FI2), and amplified by internal 2nd IF AMP. The amplified 2nd IF signal is FM-demodulated by quadrature detector, then output from pin 11.

The demodulated AF signals are applied to the RX AF circuits.

### • 2ND IF CIRCUIT



**AGC (Automatic Gain Control) CIRCUITS**  
**(For receiving AM signals)**

The AGC circuit effectively reduces the RX signal level if the signal is strong, and raises it when it is weaker. The AGC circuit detects the overall strength of RX signals and automatically adjusts the gain of RF and IF AMPs, and attenuation level of the ATT to maintain an approximately constant average level of the received signals (=the AF output level).

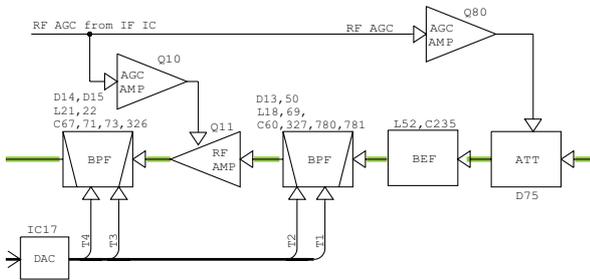
• **2nd IF AMP gain control**

The DC component in the AM-demodulated signals whose signal level is in proportion to the RX signal (RF signal) level, is feedback to the 2nd IF AMP in the IF IC. The DC voltage controls the gain of 2nd IF AMP to keep the 2nd IF signal level constant.

• **RF AMP and 1st IF AMP gain control**

The AGC voltage "RF AGC" which is in proportion to the RX signal (RF signal) level is generated by the internal 2nd IF AMP (similar as RSSI voltage). The AGC voltage "RF AGC" is output pin 17 and applied to the AGC line drivers (Q10 and Q80) via AGC SW (Q85). Q10 controls the gain of RF AMP (Q11), and Q80 controls the attenuation level of ATT (D75-77) for stable 2nd IF signal level.

• **RF AMP AND 1ST IF AMP GAIN CONTROL**



**SQUELCH CIRCUITS**

The squelch circuit cuts off the AF output signals when no RF signals are received.

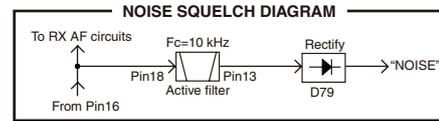
• **For receiving AM signals (RSSI SQUELCH)**

The "RSSI" signal which is in proportion to the RX signal level is applied to the CPU (IC26, pin 30). The CPU interprets that RX signals are present or absent according to the voltage of "RSSI" signal level.

• **For receiving FM (WX) signals (NOISE SQUELCH)**

A portion of FM demodulated AF signals is filtered by active BPF (IC1; pins 12, 13, R790, 792, 793, C736, 737, 744) which filters and amplifies only noise components (around 10 kHz signals) in the demodulated signals. The amplified noise components are detected into pulse-type signal by D79, then applied to the CPU (IC26) via the noise AMP (IC28). The CPU interprets that RX signals are present or absent by counting the pulse of noise signal.

If the CPU interprets that the RX signals are absent, the CPU sends the "DETMUTE" signal to the AM/FM mute SW (IC2). Then the AM/FM SW cuts off the AF line to close the squelch.



**RX AF CIRCUITS**

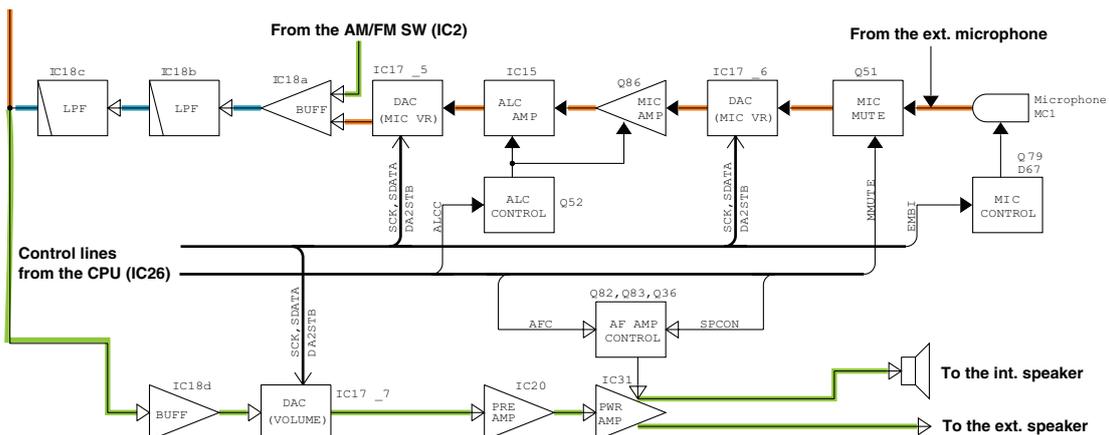
The RX AF circuits consist of AF filters, AF amplifiers, etc., and amplify, filter the demodulated AF signals.

The demodulated AF signals from the IF IC are passed through the AM/FM SW (IC2), and applied to the buffer (IC18a). The AF buffer-amplified AF signals are passed through the 5-pole LPF (IC18b/c) to filter audio band signals only, then buffer-amplified by another AF buffer (IC18d). The buffer-amplified AF signals are level-adjusted (audio output level) by DAC (IC17\_7), then applied to the AF power AMP (IC31) via AF Pre-AMP (IC20). The AF signals are power-amplified to obtain AF output level, then applied to the internal speaker or external speaker via [SP] jack (J5).

**ANL (Automatic Noise Limiter) CIRCUIT**

The ANL circuit is a limiter which reduces pulse-type noises by cutting off the AF line temporarily. When the ANL function is activated (ANL SW (Q21) is ON), demodulated AF signals are applied to the cathode of D82 (switching diode) only. If a pulse-type noise is included in the demodulated AF signals, the cathode voltage of D82 becomes higher than that of anode, and D82 turns OFF to cut-off the AF line. Thus, if the RX signals contains pulse-type noise, the demodulated AF signals are not applied to the AM/FM SW (IC2).

• **AF CIRCUITS (for RX and TX)**



## 4-2 TRANSMITTER CIRCUITS

### TX AF CIRCUITS

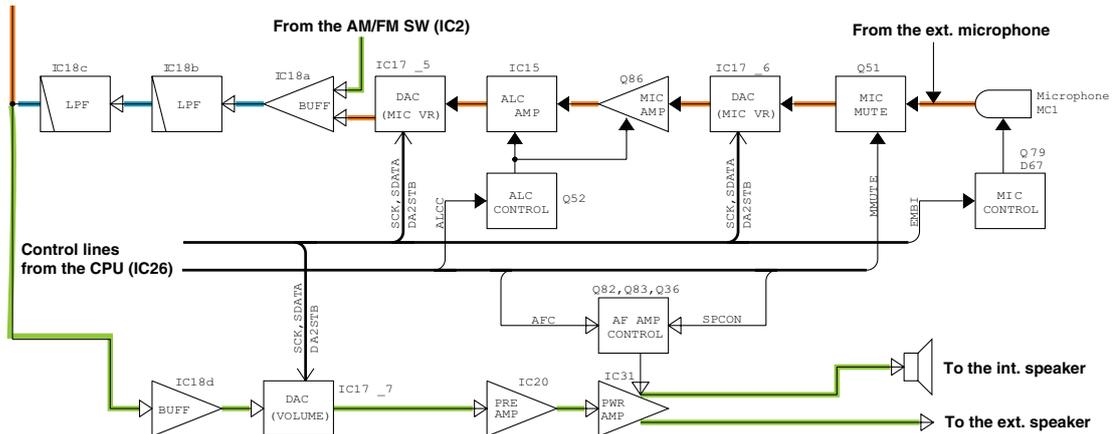
The TX AF circuit consists of microphone amplifier (MIC AMP), ALC and AF filters. ALC (Automatic Level Control) is an amplifier which reduces its gain automatically to prevent over deviation.

The audio signals from the connected headset's microphone (MIC signals) are passed through the MIC mute SW (Q51) and the DAC (IC17\_6) which adjusts the MIC signal level. The level-adjusted MIC signals are amplified by the MIC AMP (Q86), then applied to the ALC AMP (IC15).

The ALC (Automatic Level Control) AMP is an amplifier which controls its gain automatically according to the MIC signals level. The ALC provides stable modulation signals by limiting the amplitude of MIC signals to prevent the over deviation.

The output signals of ALC are applied to another DAC (IC17\_5) for level (deviation) adjustment. The level-adjusted MIC signals are passed through the buffer (IC18a) and 5-pole LPF (IC18b/c) to filter audio band signals only. The filtered MIC signals are entered to the PA UNIT, and applied to the APC AMP (PA: IC27) as the modulation signals.

### • AF CIRCUITS (for RX and TX)



### AM MODULATION CIRCUITS

The AM modulation circuits modulate the carrier with the MIC signals (=modulation signals).

The level-adjusted modulation signals from the MAIN UNIT are applied to the APC AMP. The output voltage of APC AMP which controls the gain of drive (Q3) and power (Q2) AMPs swings corresponding to the amplitude of modulation signals, thus the AM modulation is obtained.

### APC CIRCUIT (PA UNIT)

The APC (Automatic Power Control) circuit stabilizes transmit output power to prevent transmit output power level change, which is caused by load mismatching or heat effect, etc.

The power detector rectifies a portion of the TX signal and converts it into DC voltage which is in proportion to the transmit output power level. The detected voltage is applied to the input terminal (pin 3) of APC AMP (IC27; as a comparator). The TX power setting voltage "POW" is applied to another input terminal (pin 1) as the reference voltage.

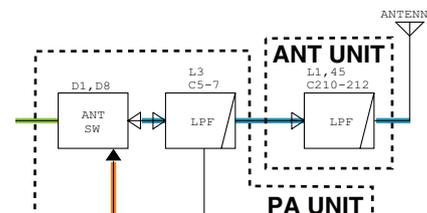
### TX AMPLIFIERS

The TX amplifiers consist pre-driver, driver and power amplifiers, and amplify the VCO output to the transmit output level.

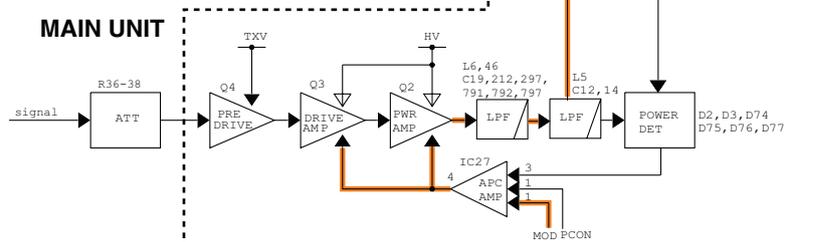
The TX VCO (Q59, D45, 46) output is applied to the pre-driver via buffers (Q60 and Q28), LO switch (D6) and ATT, and amplified by the pre-driver (Q4) to the driver (Q3) input level. The amplified TX signal is amplified by driver (Q3) to the power AMP (Q2) input level, then power-amplified by the power AMP (Q2) to the TX output level.

The comparator compares the detected voltage and reference voltage, and the difference of voltage is output from output terminal. The output voltage controls the bias of the driver and power amplifiers to reduce/increase the gain of these amplifiers for stable TX output power.

The power-amplified TX signal is passed through the LPF, ANT SW and LPF and entered to the ANT UNIT, then applied to the antenna via the LPF.



### • AM MODULATION, TX AMPLIFIERS AND APC CIRCUITS



### 4-3 FREQUENCY SYNTHESIZER CIRCUITS VCO

A VCO is an oscillator whose oscillating frequency is determined by the applied voltage. This transceiver has two VCOs; RX VCO and TX VCO. The RX VCO generates the 1st LO signals for the 1st IF signal produce, and TX VCO generates TX signal.

• **RX VCO (Q58, D38, 48)**

The RX VCO oscillates 1st LO signals for normal RX (174.350 to 183.325 MHz) and for WX channels (208.000–209.625 MHz). The generated 1st LO signals are applied to the 1st mixer (Q12) via the buffer AMPs (Q60 and Q28), LO SW (D17) and the ATT.

• **TX VCO (Q59, D45, 46)**

The TX VCO oscillates 118.000–136.975 MHz transmit signals. The generated TX signal is applied to the pre-driver via buffers (Q60 and Q28), LO SW (D6) and ATT.

A portion of each VCO output is applied to the PLL IC via the buffer (Q29).

### PLL (Phase Locked Loop) CIRCUIT

The PLL circuit provides stable oscillation for both of the TX and 1st LO frequencies (for RX). By comparing feedback VCO output and reference frequency signals, the PLL corrects the difference of these frequencies.

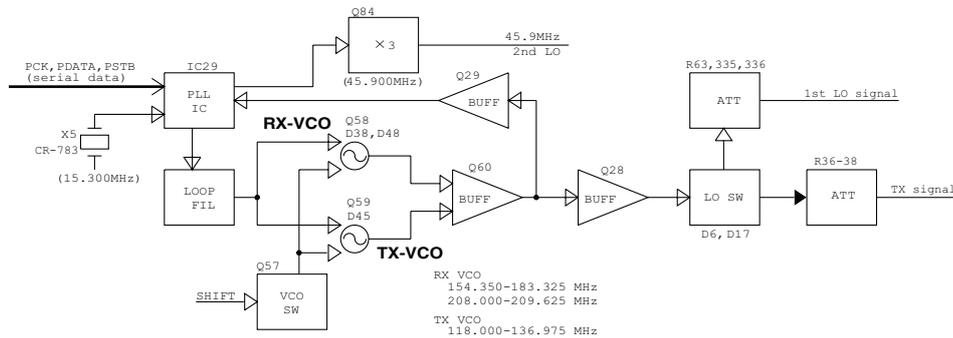
A portion of RX/TX VCO output is applied to the PLL IC via buffer (Q29). The applied VCO output is divided according to the serial data including divide ratio from the CPU, at the prescaler and programmable divider. In the same way, the reference frequency signal from the TCXO is applied to the PLL IC and divided so that these two applied signals are the same frequency.

The divided and frequency-matched signals (VCO output and the reference frequency signals) are applied to the phase comparator and phase-compared. The resulted phase difference is detected as a phase-type signal, and level-adjusted at the charge pump then output. The output pulse type signal is passed through the loop filter to be converted into the DC voltage (=Lock Voltage).

Applying the lock voltage to the variable capacitor which composes a part of the resonator of RX/TX VCO, the capacitance of variable capacitor changes corresponding to the applied lock voltage. This causes the change of resonation frequency that determines the VCO oscillating frequency to keep the VCO frequency constant.

When the oscillation frequency 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.

• **FREQUENCY SYNTHESIZER CIRCUITS**



## 4-4 PORT ALLOCATIONS

## • CPU (IC26)

LINE NAME	DESCRIPTION	IN/ OUT	STATUS	CONDITION
PTT	Ext. [PTT] input.	IN	High	While transmitting. (= [PTT] is pushed.)
UNLK	PLL unlock signal from the PLL IC (IC29).	IN	Low	While PLL is unlocked.
SCK	Clock signal to the DAC (IC17).	OUT	–	–
SDATA	Serial data to the DAC (IC17).	OUT	–	–
RSSI	RSSI voltage from the IF IC (IC1).	IN	–	–
RFDETV	TX power monitor. (The DC voltage which is in proportional to the TX power.)	IN	–	–
THERMC	Internal temperature monitor. (The DC voltage which is divided by thermistor (R701) and R702.)	IN	–	–
VOL_IN	[VOL] dial position detect. (The DC voltage which is divided by R824.)	IN	–	–
VIN	Remaining battery capacity monitor. (The voltage of "HV" line divided by R194 and R19.)	IN	–	–
DETO	1050 Hz tone (for weather alert) detect.	IN	–	–
DA2STB	Strobe signal to the DAC (IC17).	OUT	Low	–
EDATA	Serial data to the EEPROM (IC25).	I/O	High	–
ECK	Clock signal to the EEPROM (IC25).	OUT	High	–
POW	TX power setting voltage to the APC AMP (PA: IC27).	OUT	–	–
PCON	Control signal to the +3.6V regulator (Q89).	OUT	High	+3.6V regulator is activated. (= +3.6V and +5V lines are ON.)
HOUT	Battery type detect. (The voltage of +5V line which divided by R838 and R839.)	IN	High	Li-ion battery pack is attached.
HSW	Battery type detect circuit control.	OUT	High	Detect circuit is activated.
KR0–KR4	Key matrix.	IN	Low	While the key is pushed.
PSTB	Strobe signal to the PLL IC (IC29).	OUT	High	–
PDATA	Serial data to the PLL IC (IC29).	OUT	High	–
PCK	Clock signal to the PLL IC (IC29).	OUT	High	–
TXC	TXV regulator (Q7, 8) control signal.	OUT	High	TXV regulator is activated.
LIGHTC	Backlight (DS2, 3) driver (Q75, 76) control signal.	OUT	High	Backlight is ON.
LIGHT	[LIGHT] key input.	IN	Low	While the key is pushed.
JACKDET	Ext. speaker connection detect.	IN	High	Ext. speaker is connected.
EXTREGC	EXT-MIC regulator (Q25, 26) control signal.	OUT	High	While an ext. microphone is connected. (While the VOX circuit is activated; "Low.")
KS0–KS3	Strobe signals for key matrix.	OUT	Low	All the time "Low."
INI	Initial matrix return signal.	IN	Low	Any key is pushed.
EMBI	Int. microphone control signal to the MIC controller (Q79).	OUT	High	Int. microphone is enable. (While in VOX mode; "Low.")
INTPTT	[PTT] key input.	IN	Low	While the key is pushed. (= While transmitting)
BEEP	Beep sounds (AF square waves).	OUT	–	–
AGCOFF	AGC SW (Q85) control signal.	OUT	High	AGC function is disable.
NOISE	Noise level for noise squelch. (pulse-type signal)	IN	High	(Upper edge of the pulse)
SPCON	Speaker select signal to the AF power AMP (IC31). (Switching to internal or External speaker)	OUT	Low	Ext. speaker is selected.
VOX	VOX control signal from the IC21. (A portion of MIC signals which is amplified by IC21.)	IN	A/D	TX=Voltage is high RX=Voltage is low
AFC	AF power AMP controller (Q36, 82) control signal.	OUT	High	AF power AMP is activated. (= Squelch is open.)
ALCC	ALC AMP controller (Q52) control signal.	OUT	High	ALC AMP is activated. (= The ALC function is activated.)
R5C	R5S line regulator (Q20, 90) control signal.	OUT	Low	While receiving
ANLC	ANL SW (Q21) control signal.	OUT	High	ANL circuit is activated. (= The ANL function is activated.)
WXC	AF/FM SW (IC2) control signal.	OUT	High	While receiving an WX channel.
SHIFT	VCO SW (Q57) control signal.	OUT	High	While transmitting. (= TX VCO is activated.)
DETMUTE	AF/FM SW (IC2) control signal.	OUT	High	While RX AF is mute.

• CPU (IC26) (continued)

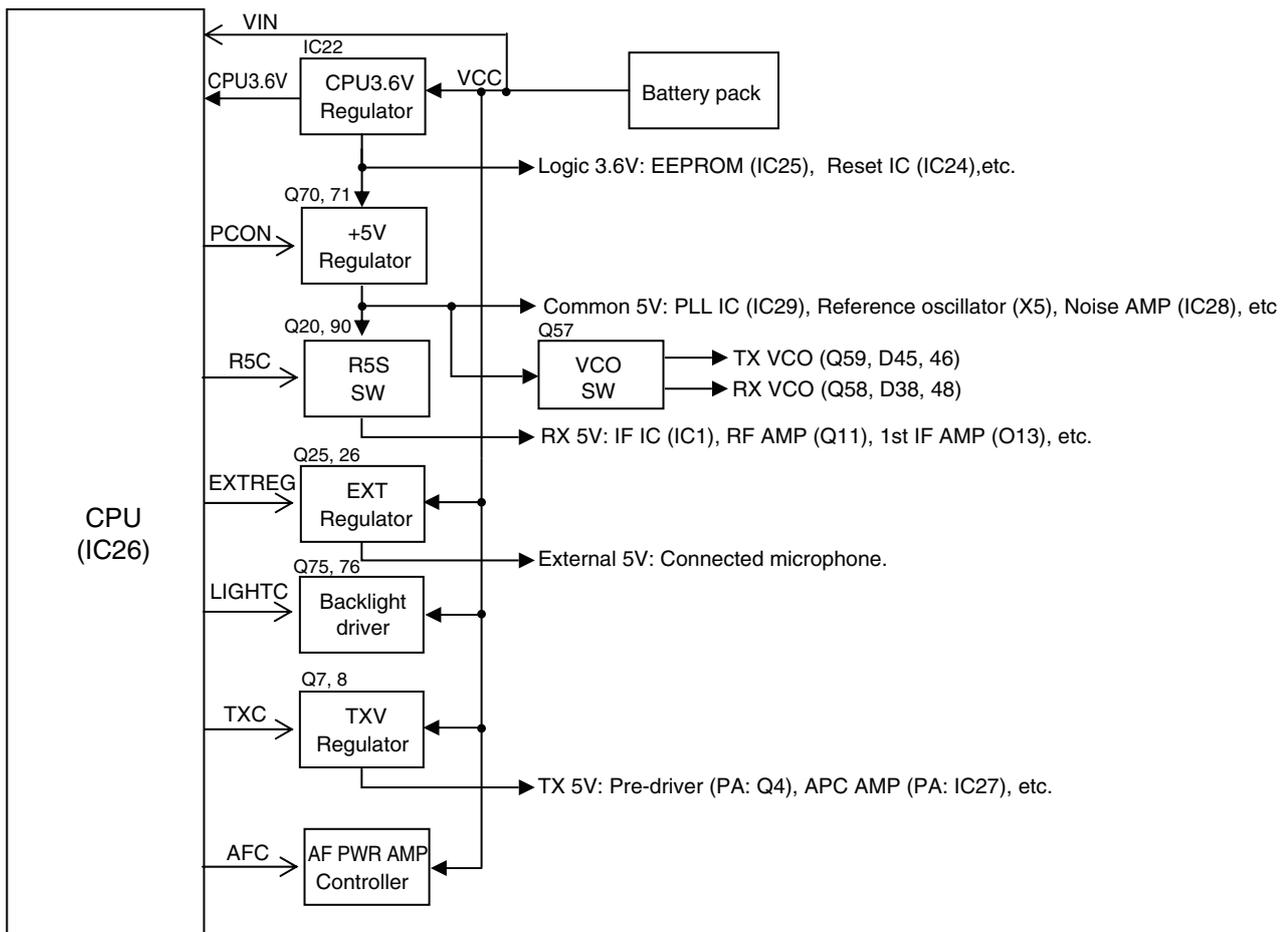
LINE NAME	DESCRIPTION	IN/OUT	STATUS	CONDITION
MMUTE	MIC mute SW (Q51) control signal.	OUT	Low	While TX AF line is mute.
SEG1–SEG34	LCD (DS1) segments.	OUT	–	–
COM1–COM4	LCD (DS1) common terminal.	OUT	–	–

• DAC (IC17)

LINE NAME	DESCRIPTION
T1	BPF tuning voltages.
T2	
T3	
T4	
MODMAX	Maximum deviation adjust voltage.
MOD30	30% deviation adjust voltage.
VOL	RX audio level adjust avoltage.
REFV	Reference frequency adjustment voltage.

4-5 VOLTAGE BLOCK DIAGRAM

Voltage from the attached battery pack is routed to the whole of the transceiver via regulators and switches.



## SECTION 5

## PARTS LIST

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1110007300	S.IC NJM2552V-TE1	T	80/17
IC2	1130006221	S.IC TC4W53FU (TE12L,F)	T	55/19.7
IC15	1110005310	S.IC AN6123MS	B	59.2/10.8
IC17	1190000350	S.IC M62363FP-650C	B	55.9/19.4
IC18	1110006470	S.IC LMV324IPWR	B	57.3/31.6
IC20	1110006490	S.IC LMV321IDCKR	B	100.1/24.4
IC21	1110006490	S.IC LMV321IDCKR	B	46.5/10
IC22	1180002690	S.REG S-812C36AMC-C2Q-T2G	B	15.4/8
IC24	1130013340	S.IC BD5230G-TR	B	21.1/41.4
IC25	1130012430	S.IC S-24CS64A0I-T8T1G	B	24.2/14.4
IC26	1140014451	S.IC uPD78F0338GC-9EB-A	B	36.5/25.1
IC28	1110006490	S.IC LMV321IDCKR	T	54.3/32
IC29	1130011671	S.IC MB15E03SLPFV1-G-ER-6E1	T	80.4/34.4
IC31	1110006770	S.IC TDA8547TS/N	T	99.4/20.2
IC32	1190001860	S.IC EW-460-FT	B	9.8/32.4
IC33	1130007111	S.IC TC7W04FU (TE12L,F)	B	21.2/26.2
Q7	1520000460	S.TR 2SB1132 T100 R	B	20.7/4.8
Q8	1590001170	S.TR XP1501-(TX) .AB	B	16.4/3.8
Q10	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	87.8/33.8
Q11	1580000731	S.FET 3SK293 (TE85L,F)	B	89.5/38.3
Q12	1580000800	S.FET 3SK324UG-TL-E	B	87.9/24.7
Q13	1530003260	S.TR 2SC5006-T1	T	87.5/13
Q20	1590003250	S.TR UNR9115J-(TX)	T	58.5/27.4
Q21	1590003270	S.TR UNR9210J-(TX)	T	58.8/21.1
Q25	1510000510	S.TR 2SA1576A T106R	B	92.8/14.5
Q26	1590003290	S.TR UNR9213J-(TX)	B	95.2/17.8
Q28	1530003260	S.TR 2SC5006-T1	B	78/22.8
Q29	1530003260	S.TR 2SC5006-T1	B	79.9/31.6
Q33	1530002851	S.TR 2SC4116-BL (TE85R,F)	T	71.8/24.1
Q36	1590001170	S.TR XP1501-(TX) .AB	T	92.8/36.3
Q50	1590003380	S.TR UNR9111J-(TX)	B	13.7/40.9
Q51	1590003290	S.TR UNR9213J-(TX)	B	54/7.6
Q52	1590001980	S.TR XP4315 (TX)	B	41.8/12.8
Q57	1590001810	S.TR XP1113 (TX)	T	75/27.2
Q58	1530003260	S.TR 2SC5006-T1	B	75.3/31.6
Q59	1530003260	S.TR 2SC5006-T1	B	75.6/24.9
Q60	1530003260	S.TR 2SC5006-T1	B	77/28.4
Q70	1520000460	S.TR 2SB1132 T100 R	B	20.1/19.8
Q71	1590001170	S.TR XP1501-(TX) .AB	B	16.2/19.4
Q75	1510000510	S.TR 2SA1576A T106R	B	35.2/11.3
Q76	1530002691	S.TR 2SC4116-GR (TE85R,F)	B	37.9/11.3
Q79	1590003290	S.TR UNR9213J-(TX)	B	66.9/39.3
Q80	1530003990	S.TR 2SC4738-BL (TE85L,F)	T	92.4/31.3
Q81	1590003290	S.TR UNR9213J-(TX)	T	94.2/25.6
Q82	1520000460	S.TR 2SB1132 T100 R	T	93.9/40.8
Q83	1590003290	S.TR UNR9213J-(TX)	T	96.3/26.1
Q84	1530003190	S.TR 2SC4617 TLQ	T	78.8/27.8
Q85	1590003290	S.TR UNR9213J-(TX)	T	88.4/31.2
Q86	1530002851	S.TR 2SC4116-BL (TE85R,F)	B	56.4/6.3
Q88	1590003290	S.TR UNR9213J-(TX)	B	8.8/35.5
Q89	1590001980	S.TR XP4315 (TX)	B	16.3/13.7
Q90	1590003290	S.TR UNR9213J-(TX)	T	54.9/27.3
Q91	1590003400	S.TR UNR9112J	B	18.4/25.5
Q92	1590003290	S.TR UNR9213J-(TX)	B	18.4/28
D6	1750000581	S.DIO 1SV307 (TPH3,F)	B	84.7/19.6
D13	1750000721	S.VCP HVC375BTRF-E	B	99.8/38.2
D14	1750000711	S.VCP HVC350BTRF-E	B	86.5/33.1
D15	1750000711	S.VCP HVC350BTRF-E	B	87.5/28.1
D17	1790001260	S.DIO MA2S077-(TX)	B	86.6/20.1
D23	1790000860	S.DIO MA133 (TX)	B	95.2/15.5
D31	1750000940	S.DIO ISS400 TE61	B	41.7/7.7
D36	1790001250	S.DIO MA2S111-(TX)	B	11.3/40.5
D38	1720000730	S.VCP MA2S30400L	B	69.8/32.8
D45	1750000771	S.VCP HVC376BTRF-E	B	70.2/26.2
D46	1750000771	S.VCP HVC376BTRF-E	B	68.1/26.2
D48	1720000730	S.VCP MA2S30400L	B	68.5/32.8
D50	1750000721	S.VCP HVC375BTRF-E	B	96.4/39.1
D52	1790001250	S.DIO MA2S111-(TX)	B	31.7/7.2
D53	1790001240	S.DIO MA2S728-(TX)	B	47/15
D64	1790001250	S.DIO MA2S111-(TX)	B	16.7/27
D67	1730002320	S.ZEN MA8051-M (TX)	B	68.1/41.2
D68	1790001250	S.DIO MA2S111-(TX)	B	30.9/12.5
D69	1790001250	S.DIO MA2S111-(TX)	B	24/8.9
D70	1790001250	S.DIO MA2S111-(TX)	B	28.1/8.4
D72	1790001250	S.DIO MA2S111-(TX)	B	28/11
D73	1790001250	S.DIO MA2S111-(TX)	B	28/12.2
D75	1790001260	S.DIO MA2S077-(TX)	B	99.4/32
D76	1790001260	S.DIO MA2S077-(TX)	B	96.8/31.6
D77	1790001260	S.DIO MA2S077-(TX)	B	99.4/33.2
D79	1790001240	S.DIO MA2S728-(TX)	T	70.6/16.5
D81	1790001250	S.DIO MA2S111-(TX)	T	76.2/38.7
D82	1790001240	S.DIO MA2S728-(TX)	T	55/14.5
D85	1790001250	S.DIO MA2S111-(TX)	B	13.1/34.5
D86	1790001250	S.DIO MA2S111-(TX)	B	30.3/9.9
D87	1790001250	S.DIO MA2S111-(TX)	B	26.4/9.1
D88	1750000370	S.DIO DA221 TL	T	84.2/11.8
D89	1790001240	S.DIO MA2S728-(TX)	T	89.9/34.7
FI2	2020001540	CER CFWL450KDF-A-B0		
FI3	2030000660	S.MLH FL-417 MFT46.3S 46.350MHZ	T	89.9/19.9
X3	6050012750	S.XTL CR-867 (SMD-49.4.9152 MHz)	B	31/41.1
X4	6070000300	S.DCR JTBM450CX24 <JJE>	B	80/16.9

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
X5	6050011940	S.XTL CR-783 (15.3 MHz)	B	61.5/39.6
L18	6200009930	S.COL C2012C-68NG-A	B	100.5/40.3
L21	6200009930	S.COL C2012C-68NG-A	B	86.5/37.7
L22	6200009930	S.COL C2012C-68NG-A	B	87/31.2
L24	6200007850	S.COL ELJNC R82K-F	T	88/27
L38	6200009351	S.COL ELJRE R22GFA	B	80.5/23.7
L52	6200009890	S.COL C2012C-82NG-A	B	98.9/35
L55	6200007001	S.COL ELJRE 82NGFA	B	86.3/15.6
L57	6200010540	S.COL C2012C-47NG-A	B	69.7/30.6
L58	6200003550	S.COL MLF1608A 4R7K-T	B	71.5/28.4
L63	6200009920	S.COL C2012C-R10G-A	B	72.8/34.2
L64	6200011050	S.COL C2012C-12G-A	B	72.8/22.9
L67	6200011021	S.COL ELJRF 82NJFB	B	78.5/28.9
L69	6200009930	S.COL C2012C-68NG-A	B	94.6/39.5
L71	6200003640	S.COL MLF1608E 100K-T	B	70.6/23.7
L72	6200003640	S.COL MLF1608E 100K-T	B	69.1/34.6
L82	6200004600	S.COL MLF1608D R15K-T	T	85.8/12.6
L87	6200004600	S.COL MLF1608D R15K-T	T	79.1/24.6
L88	6200004600	S.COL MLF1608D R15K-T	T	81.3/24.7
L91	6200003550	S.COL MLF1608A 4R7K-T	B	69.5/28.9
L92	6200009890	S.COL C2012C-82NG-A	B	68.9/23.3
L93	6200011011	S.COL ELJRF 68NJFB	B	86.9/22.9
R36	7030005570	S.RES ERJ2GEJ 820 X (82)	B	87.9/17.2
R37	7030005570	S.RES ERJ2GEJ 820 X (82)	B	86.6/17.7
R38	7030005570	S.RES ERJ2GEJ 820 X (82)	B	87.5/15.4
R39	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	84.4/17.1
R40	7030005030	S.RES ERJ2GEJ 152 X (1.5 k)	B	13.7/4.9
R43	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	99.8/36.9
R44	7030005080	S.RES ERJ2GEJ 823 X (82 k)	B	92.1/37.4
R45	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	92/140
R46	7030005530	S.RES ERJ2GEJ 100 X (10)	T	87.8/35.8
R48	7030010010	S.RES ERJ2RKF 334 X (330 k)	B	90.2/36.3
R49	7030004970	S.RES ERJ2GEJ 470 X (47)	B	86.8/36.1
R51	7030008280	S.RES ERJ2GEJ 271 X (270)	B	87.6/40.3
R52	7030005000	S.RES ERJ2GEJ 471 X (470)	B	86.8/35.2
R53	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	84.4/33.1
R54	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	85.5/27.4
R59	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	85.2/26.2
R60	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	84.9/24.8
R61	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	86.5/21.1
R62	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	86.1/24.3
R63	7030004980	S.RES ERJ2GEJ 101 X (100)	B	90.2/21.5
R64	7030004980	S.RES ERJ2GEJ 101 X (100)	B	88.6/27
R65	7030004990	S.RES ERJ2GEJ 221 X (220)	B	90.3/22.4
R66	7030005010	S.RES ERJ2GEJ 681 X (680)	B	90.3/26
R68	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	87.5/11.6
R69	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	85.8/15.5
R72	7030005000	S.RES ERJ2GEJ 471 X (470)	T	73.7/13.3
R73	7030005240	S.RES ERJ2GEJ 473 X (47 k)	T	56/13.4
R74	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	59.1/32.1
R92	7030010040	S.RES ERJ2GEJ-JPW	T	58.6/14.2
R99	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	57/15.1
R100	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	T	58.9/19.3
R101	7030005110	S.RES ERJ2GEJ 224 X (220 k)	T	57.3/16.6
R102	7030009150	S.RES ERJ2GEJ 824 X (820 k)	T	57.3/18.2
R107	7030007270	S.RES ERJ2GEJ 151 X (150)	T	81.8/5.1
R108	7030000250	S.RES MCR10EZHJ 82 (820)	B	93.5/11.7
R109	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	93.7/16.5
R111	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	84.6/22
R114	7030008280	S.RES ERJ2GEJ 271 X (270)	B	80.2/25.4
R115	7030005220	S.RES ERJ2GEJ 221 X (22 k)	B	78.3/24.4
R117	7030004970	S.RES ERJ2GEJ 470 X (47)	B	80.6/29.9
R118	7030005300	S.RES ERJ2GEJ 150 X (15)	B	79.6/28.9
R119	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	77.8/33.9
R120	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	79.5/33
R121	7030005000	S.RES ERJ2GEJ 471 X (470)	B	79.4/33.9
R130	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	71.8/25.9
R133	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	76.2/37.2
R134	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	74.4/30.6
R135	7030008370	S.RES ERJ2GEJ 561 X (560)	T	73.9/32.6
R142	7030000010	S.RES MCR10EZHJ JPW (000)	T	97.8/39.1
R145	7030005040	S.RES ERJ2GEJ 472 X (47 k)	T	96.6/35.7
R147	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	T	96.6/34
R148	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	91.8/34
R149	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	90/40.1
R150	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	88.7/40.7
R160	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	61.7/31.6
R161	7030005720	S.RES ERJ2GEJ 563 X (56 k)	B	59.4/28.3
R162	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	57.7/26.5
R163	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	57.7/28.3
R194	7030010010	S.RES ERJ2RKF 334 X (330 k)	B	38.1/8.1
R195	7030010020	S.RES ERJ2RKF 154 X (150 k)	B	39.3/8.1
R210	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	96.2/25.6
R211	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	53.6/26.5
R212	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	56/25.6
R213	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	56/26.5
R214	7030009150	S.RES ERJ2GEJ 824 X (820 k)	B	53.6/27.5
R215	7030007310	S.RES ERJ2GEJ 155 X (1.5 M)	B	53.6/28.5
R216	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	53/29.9
R217	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	54.3/36.7
R218	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	54.3/35.8
R220	7030005000	S.RES ERJ2GEJ 471 X (470)	B	13.1/39.4
R222	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	17/42.7
R225	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	54.4/9.7

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
R226	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	53.1/9
R227	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	51.1/5.9
R228	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	60.5/7.8
R231	7030010040	S.RES ERJ2GEJ-JPW	B	54.5/13.6
R232	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	60.5/13.5
R234	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	55.8/12.2
R235	7030008410	S.RES ERJ2GEJ 392 X (3.9 k)	B	59.1/7.6
R236	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	56.2/2.5
R237	7030008310	S.RES ERJ2GEJ 564 X (560 k)	B	56.3/11
R242	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	56/34.9
R243	7030005000	S.RES ERJ2GEJ 471 X (470)	B	60.9/21.1
R245	7030009150	S.RES ERJ2GEJ 824 X (820 k)	B	60.6/28.4
R246	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	59.4/27.4
R247	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	57.7/35.8
R252	7030010040	S.RES ERJ2GEJ-JPW	T	75.2/33.8
R253	7030010040	S.RES ERJ2GEJ-JPW	T	74.3/33.9
R254	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	76.8/29.9
R256	7030005000	S.RES ERJ2GEJ 471 X (470)	B	75.8/34.3
R258	7030008340	S.RES RR0510P-182-D (1.8 k)	B	73.8/31.8
R260	7030008340	S.RES RR0510P-182-D (1.8 k)	B	75.8/23.1
R262	7030008370	S.RES ERJ2GEJ 561 X (560)	B	73.1/27.8
R265	7030005000	S.RES ERJ2GEJ 471 X (470)	B	79/30.1
R266	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	77.4/29.9
R272	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	86.1/26.2
R277	7030010040	S.RES ERJ2GEJ-JPW	B	97.7/39.1
R280	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	84/39.1
R281	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	82.9/39.1
R282	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	81.8/39.2
R283	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	51.9/28.9
R285	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	51/19.1
R293	7030010010	S.RES ERJ2RKF 334 X (330 k)	B	91.1/36.4
R307	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	60.4/32.4
R308	7510001661	S.TMR NTCG16 4LH 473JT	B	60.5/33.6
R311	7030005110	S.RES ERJ2GEJ 224 X (220 k)	B	97.7/40
R313	7030004970	S.RES ERJ2GEJ 470 X (47)	B	79/26.3
R316	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	51.8/25.3
R317	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	50.2/27.7
R318	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	51.7/26.5
R319	7510001661	S.TMR NTCG16 4LH 473JT	B	50.4/25.5
R325	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	82.4/23.2
R335	7030004980	S.RES ERJ2GEJ 101 X (100)	B	90.3/20.3
R336	7030005590	S.RES ERJ2GEJ 680 X (68)	B	89/21.5
R337	7030004970	S.RES ERJ2GEJ 470 X (47)	T	82.7/12.2
R349	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	72.1/8.2
R350	7030007280	S.RES ERJ2GEJ 331 X (330)	T	90.9/25.6
R351	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	74.2/6.1
R352	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	81.3/3.5
R353	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	97.8/25.5
R354	7030008300	S.RES ERJ2GEJ 184 X (180 k)	B	100/26.1
R355	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	100/22.4
R356	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	98/24
R357	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	50.2/8.1
R358	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	47/7
R359	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	45.7/7.7
R360	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	46.5/13.1
R361	7030005160	S.RES ERJ2GEJ 105 X (1 M)	B	46.8/16.9
R362	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	B	46.5/12.1
R701	7510001661	S.TMR NTCG16 4LH 473JT	B	44.8/43
R702	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	42.9/42.5
R705	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	15.3/17.2
R706	7030005820	S.RES RR0510P-103-D (10 k)	B	16.3/17.2
R708	7030011000	S.RES RR0510P-392-D (3.9 k)	B	17.6/17.7
R712	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	18.9/40.9
R716	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	28.5/13.8
R717	7030007340	S.RES ERJ2GEJ 153 X (15 k)	B	28.9/15
R718	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	42/39.4
R719	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	37.8/38.2
R720	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	42/38.5
R722	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	40.2/40.3
R723	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	40.2/41.2
R724	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	36.1/36.7
R725	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	45.2/38.8
R729	7030010040	S.RES ERJ2GEJ-JPW	B	32.6/37.5
R731	7030008010	S.RES ERJ2GEJ 123 X (12 k)	B	31.5/34.9
R732	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	30.2/32.1
R733	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	29.3/32.1
R734	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	28.4/32.2
R735	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	27.3/31.2
R736	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	25/31.1
R737	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	25.1/30.1
R738	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	19/23.9
R743	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	18.8/39.4
R744	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	27.2/19.8
R745	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	28.9/18.7
R746	7410001130	S.ARY EXB28V102JX	B	30.9/16.3
R747	7410001130	S.ARY EXB28V102JX	B	32.7/14.5
R750	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	54.1/39.9
R751	7030005060	S.RES ERJ2GEJ 333 X (33 k)	B	70.2/41.1
R757	7030009290	S.RES ERJ2GEJ 562 X (5.6 k)	B	37.7/13.3
R758	7030008410	S.RES ERJ2GEJ 392 X (3.9 k)	B	39.7/11.3
R759	7030004990	S.RES ERJ2GEJ 221 X (220)	T	57.3/4.5
R765	7030007320	S.RES ERJ2GEJ 225 X (2.2 M)	B	44.7/35.5
R766	7030006610	S.RES ERJ2GEJ 394 X (390 k)	B	45.6/35.5
R772	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	95.4/30.9
R773	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	95.4/32.9
R774	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	95.4/33.8
R775	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	91.3/32.7
R776	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	89.7/32.3
R777	7030005230	S.RES ERJ2GEJ 334 X (330 k)	T	90.9/31
R778	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	95.4/31.9
R779	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	85.8/33.6
R780	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	89.2/33.5
R783	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	78.5/12.6
R784	7030004980	S.RES ERJ2GEJ 101 X (100)	T	84/15.6

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
R785	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	79.6/10.9
R786	7030005530	S.RES ERJ2GEJ 100 X (10)	B	84.2/13.9
R787	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	80.5/12.7
R788	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	79.6/11.8
R789	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	71.6/14
R790	7030005170	S.RES ERJ2GEJ 474 X (470 k)	T	77.6/12.7
R791	7030004970	S.RES ERJ2GEJ 470 X (47)	T	84.9/15.5
R792	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	75.1/11.7
R793	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	74.1/10.4
R794	7030005060	S.RES ERJ2GEJ 333 X (33 k)	T	85.6/30.6
R795	7030005060	S.RES ERJ2GEJ 333 X (33 k)	T	57.5/31.5
R796	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	56.3/32.9
R797	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	55.6/30.2
R798	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	75.3/10.5
R799	7030007280	S.RES ERJ2GEJ 331 X (330)	T	89.1/14.6
R800	7030004980	S.RES ERJ2GEJ 101 X (100)	T	75.6/32.2
R801	7030005530	S.RES ERJ2GEJ 100 X (10)	T	76.2/34.6
R806	7030004980	S.RES ERJ2GEJ 101 X (100)	B	58.1/38.4
R808	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	65.5/36.8
R809	7030006290	S.RES RR0510R-333-D (33 k)	B	56.3/41.7
R810	7030005860	S.RES RR0510R-823-D (82 k)	B	57.7/39.6
R811	7030005100	S.RES ERJ2GEJ 154 X (150 k)	B	57.7/40.5
R812	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	95.2/22.8
R813	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	95.9/24
R814	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	T	97.1/24.4
R815	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	95.1/20.7
R816	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	95.1/22.3
R817	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	95.1/15.4
R818	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	95.1/19.1
R819	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	95.1/16.3
R820	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	96.5/15.8
R821	7030005220	S.RES ERJ2GEJ 223 X (22 k)	T	92.7/33.8
R822	7030007060	S.RES ERJ2GEJ 684X (680 k)	T	80.2/27.4
R823	7030005040	S.RES ERJ2GEJ 474 X (4.7 k)	T	77.4/23.7
R824	7210003061	VAR TP76N00N-15F-A103-2251A		
R825	7030005240	S.RES ERJ2GEJ 473 X (47 k)	B	41.8/34.9
R826	7030009270	S.RES ERJ2GEJ 821 X (820)	B	56.3/8.5
R829	7030004970	S.RES ERJ2GEJ 470 X (47)	B	79.4/34.8
R830	7030011000	S.RES RR0510P-392-D (3.9 k)	B	74.9/34.3
R831	7030011000	S.RES RR0510P-392-D (3.9 k)	B	74.9/23.1
R832	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	84.6/22.9
R833	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	101.5/32.9
R834	7030010040	S.RES ERJ2GEJ-JPW	T	98.8/7.9
R837	7030010040	S.RES ERJ2GEJ-JPW	T	98.6/12.3
R838	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	13.1/32.4
R839	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	10.3/36.8
R840	7030005050	S.RES ERJ2GEJ 103 X (10 k)	T	56.1/12.4
R847	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	83.7/26.2
R849	7030006000	S.RES RR0510P-222-D (2.2 k)	B	57.2/41.7
R851	7030000020	S.RES MCR10EZHJ 1 (010)	B	99.1/4
R852	7030000020	S.RES MCR10EZHJ 1 (010)	B	95.4/4
R853	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	16.7/21.8
R854	7030005230	S.RES ERJ2GEJ 334 X (330 k)	B	45.7/16
R855	7030007350	S.RES ERJ2GEJ 393 X (39 k)	B	15.7/40.9
R856	7030011000	S.RES RR0510P-392-D (3.9 k)	B	17.5/6
R857	7030005210	S.RES ERJ2GEJ 822 X (8.2 k)	B	13.7/5.8
R858	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	65.8/7.8
R859	7030000020	S.RES MCR10EZHJ 1 (010)	B	93.4/4.2
R860	7030000020	S.RES MCR10EZHJ 1 (010)	B	97.3/4
R861	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	26.1/28
R862	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	23.6/25.5
R863	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	23.6/26.5
R864	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	23.6/27.5
R865	7030005090	S.RES ERJ2GEJ 104 X (100 k)	B	23.6/28.5
R866	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	26/19.1
R867	7030010040	S.RES ERJ2GEJ-JPW	T	60.1/13.7
R868	7030005070	S.RES ERJ2GEJ 683 X (68 k)	T	57.3/12.9
R870	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	B	53.5/10.7
R871	7030011910	S.RES ERJ2GEJ 106 X (10 M)	B	51/22
R872	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	64.1/33.7
R873	7510001770	S.TMR NTCG10 4LH 473JT	B	51/17.5
R874	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	90/13
C37	4550006250	S.TAN TEESVA 1A 106M8R	B	82/12.1
C41	4030017390	S.CER ECJ0EC1H180J	B	87.8/14.7
C44	4030017460	S.CER ECJ0EB1E102K	B	89/11.3
C47	4030017460	S.CER ECJ0EB1E102K	B	85.7/17.7
C48	4030017460	S.CER ECJ0EB1E102K	B	87.4/16
C49	4550007090	S.TAN TEESVA 1A 226M8R	B	32.4/3.4
C50	4510009090	S.ELLE EEE1HS0R1SR	B	19.3/9

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C87	4030017460	S.CER ECJ0EB1E102K	T	89.1/13
C90	4030017460	S.CER ECJ0EB1E102K	T	84.3/13.4
C93	4030017460	S.CER ECJ0EB1E102K	T	73.5/14.6
C95	4030016790	S.CER ECJ0EB1C103K	T	54.7/12.8
C97	4030016790	S.CER ECJ0EB1C103K	B	61.4/16.5
C110	4030016930	S.CER ECJ0EB1A104K	B	84.2/39.2
C115	4030016930	S.CER ECJ0EB1A104K	T	59.8/19.5
C120	4030017460	S.CER ECJ0EB1E102K	B	38.1/5.8
C121	4550007750	S.TAN TEESVA 1V 225M8R	B	39.7/4.4
C127	4030017460	S.CER ECJ0EB1E102K	T	99.8/39.3
C130	4550007100	S.TAN TEESVC 1A 107M12R	T	78.2/7.9
C150	4030017640	S.CER ECJ0EC1H150J	B	79.5/22.6
C151	4030017610	S.CER ECJ0EC1H090C	B	78.1/25.6
C152	4030017460	S.CER ECJ0EB1E102K	B	79.5/24.2
C153	4030017460	S.CER ECJ0EB1E102K	B	78.3/32.7
C155	4030017660	S.CER ECJ0EC1H330J	B	78.9/27.7
C156	4030017460	S.CER ECJ0EB1E102K	B	80.7/33.4
C168	4550000560	S.TAN TEESVA 1V 334M8R	T	70.5/30
C169	4550002980	S.TAN TEESVA 1C 225M8R	T	70.5/32.1
C171	4030017460	S.CER ECJ0EB1E102K	B	80.3/26.3
C172	4030017460	S.CER ECJ0EB1E102K	T	76.9/26.8
C173	4550007090	S.TAN TEESVA 1A 226M8R	T	70.5/27.9
C174	4030017460	S.CER ECJ0EB1E102K	T	76.6/36
C176	4030016930	S.CER ECJ0EB1A104K	B	40.4/8.1
C184	4550007770	S.TAN TEESVB2 1C 336M8R	T	100.7/42.2
C186	4030017460	S.CER ECJ0EB1E102K	T	97.6/34
C188	4550007260	S.TAN F931C475MAABMA	T	99.2/35.5
C191	4030017460	S.CER ECJ0EB1E102K	B	84.9/31.8
C193	4030017460	S.CER ECJ0EB1E102K	B	85/28.6
C195	4550007100	S.TAN TEESVC 1A 107M12R	B	98.1/18.4
C196	4030017460	S.CER ECJ0EB1E102K	T	97/43.6
C197	4030016790	S.CER ECJ0EB1C103K	T	56.7/23.6
C202	4030017490	S.CER C1608 JB 1A 105K-T	B	53.7/25.4
C221	4550007100	S.TAN TEESVC 1A 107M12R	B	101.8/18.4
C223	4030017490	S.CER C1608 JB 1A 105K-T	B	94.1/25.4
C224	4030016930	S.CER ECJ0EB1A104K	B	61.7/33.2
C225	4030016950	S.CER ECJ0EB1A473K	B	62.9/33.7
C226	4030017770	S.CER ECJ0EB1E332K	B	56/36.7
C227	4030018240	S.CER ECJ0EB1E562K	B	54.3/34.9
C228	4030018140	S.CER ECJ0EB1H391K	B	56/35.8
C231	4030017460	S.CER ECJ0EB1E102K	T	58.5/12.9
C235	4030017570	S.CER ECJ0EC1H040B	B	101.5/35
C237	4030017460	S.CER ECJ0EB1E102K	B	11.3/39.4
C238	4030018860	S.CER ECJ0EB0J105K	B	14/42.7
C239	4030016950	S.CER ECJ0EB1A473K	B	16/42.7
C240	4030017460	S.CER ECJ0EB1E102K	B	15/42.7
C241	4030017460	S.CER ECJ0EB1E102K	B	13/42.7
C242	4030016790	S.CER ECJ0EB1C103K	B	54.7/10.9
C243	4030017460	S.CER ECJ0EB1E102K	B	8.2/40.5
C245	4030017780	S.CER ECJ0EB1E472K	B	51.8/7.5
C246	4030017460	S.CER ECJ0EB1E102K	B	59.5/6.2
C247	4550006250	S.TAN TEESVA 1A 106M8R	B	63.4/9.7
C250	4550007770	S.TAN TEESVB2 1C 336M8R	T	99.9/14.9
C251	4030016930	S.CER ECJ0EB1A104K	B	58.3/8.5
C254	4030016930	S.CER ECJ0EB1A104K	B	56.1/13.6
C255	4030016930	S.CER ECJ0EB1A104K	B	61.5/7.8
C256	4550007260	S.TAN F931C475MAABMA	B	63.5/12.2
C257	4030017760	S.CER ECJ0EB1H222K	B	60.4/6.1
C258	4030018090	S.CER ECJ0EB1C822K	B	57.7/36.7
C259	4030016930	S.CER ECJ0EB1A104K	B	54.5/12.6
C260	4030016790	S.CER ECJ0EB1C103K	B	61.9/15.1
C261	4030017700	S.CER ECJ0EC1H151J	B	57.7/34.9
C269	4030017460	S.CER ECJ0EB1E102K	B	56/28.3
C273	4030017460	S.CER ECJ0EB1E102K	B	93.8/9.3
C274	4030017460	S.CER ECJ0EB1E102K	B	73.7/10
C288	4030017460	S.CER ECJ0EB1E102K	B	33.6/36.2
C293	4030018860	S.CER ECJ0EB0J105K	B	59.4/25.6
C294	4030016930	S.CER ECJ0EB1A104K	B	56/27.4
C295	4030016930	S.CER ECJ0EB1A104K	B	57.7/27.4
C301	4030017460	S.CER ECJ0EB1E102K	T	77.1/28.6
C302	4030017510	S.CER ECJ0EC1H680J	B	70.8/34.3
C306	4030017660	S.CER ECJ0EC1H330J	B	72.7/31.1
C307	4030017580	S.CER ECJ0EC1H060C	B	72.2/25.7
C308	4030017460	S.CER ECJ0EB1E102K	T	75.5/30.2
C309	4030017460	S.CER ECJ0EB1E102K	T	74.6/29
C310	4030017660	S.CER ECJ0EC1H330J	B	75.2/33.1
C311	4030017680	S.CER ECJ0EC1H820J	B	73.6/24.5
C312	4030017460	S.CER ECJ0EB1E102K	B	73.9/30.5
C313	4030017460	S.CER ECJ0EB1E102K	B	75.8/26.6
C315	4030017400	S.CER ECJ0EC1H220J	B	74/25.7
C316	4030017540	S.CER ECJ0EC1HR75B	B	76.2/30.2
C317	4030017540	S.CER ECJ0EC1HR75B	B	76.8/26.6
C319	4030017460	S.CER ECJ0EB1E102K	B	77.9/31.1
C323	4030016790	S.CER ECJ0EB1C103K	B	90.3/23.3
C325	4030017360	S.CER ECJ0EC1H030B	B	88.1/33
C326	4030017360	S.CER ECJ0EC1H030B	B	87.1/29.6
C327	4030017460	S.CER ECJ0EB1E102K	B	96.2/41.1
C328	4030017460	S.CER ECJ0EB1E102K	B	98.3/41.2
C329	4030017350	S.CER ECJ0EC1H020B	B	97.7/38.2
C330	4030017780	S.CER ECJ0EB1E472K	B	52/27.7
C331	4030016790	S.CER ECJ0EB1C103K	B	60.6/26.8
C335	4030017670	S.CER ECJ0EC1H390J	B	73.1/26.9
C336	4030017450	S.CER ECJ0EB1E271K	B	72/24.5
C338	4030017660	S.CER ECJ0EC1H330J	B	72.6/33.0
C355	4030018860	S.CER ECJ0EB0J105K	T	60.2/15.1
C361	4030016790	S.CER ECJ0EB1C103K	B	89.4/40.3
C364	4030017460	S.CER ECJ0EB1E102K	B	93/37.5
C365	4030017460	S.CER ECJ0EB1E102K	T	87.3/37
C381	4030017460	S.CER ECJ0EB1E102K	T	56/16.2
C390	4030016790	S.CER ECJ0EB1C103K	T	86.7/15.5
C391	4030018860	S.CER ECJ0EB0J105K	T	87.8/14.5
C394	4030017680	S.CER ECJ0EC1H820J	T	86/14.3
C409	4030017460	S.CER ECJ0EB1E102K	B	101.5/37.3
C410	4030017460	S.CER ECJ0EB1E102K	B	96.8/35.9

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C411	4030017460	S.CER ECJ0EB1E102K	T	97/37.7
C412	4030017460	S.CER ECJ0EB1E102K	B	94.8/37.3
C413	4030017460	S.CER ECJ0EB1E102K	B	101.6/26.1
C414	4030017460	S.CER ECJ0EB1E102K	T	85.5/26.6
C415	4030017460	S.CER ECJ0EB1E102K	B	83.7/24.6
C416	4030017460	S.CER ECJ0EB1E102K	B	84.2/35
C417	4030017460	S.CER ECJ0EB1E102K	B	83.7/32.2
C420	4030017420	S.CER ECJ0EC1H470J	T	80/4
C433	4030016930	S.CER ECJ0EB1A104K	B	97.1/24
C434	4030016930	S.CER ECJ0EB1A104K	T	95.5/14.2
C435	4030016960	S.CER ECJ0EB1C183K	B	50.4/7.1
C436	4030016960	S.CER ECJ0EB1C183K	B	48.6/8.1
C437	4030017730	S.CER ECJ0EB1E471K	B	47/8.1
C439	4030016790	S.CER ECJ0EB1C103K	B	45.9/14.4
C602	4030017460	S.CER ECJ0EB1E102K	B	10.7/10.7
C604	4030017460	S.CER ECJ0EB1E102K	B	44.5/7.6
C621	4030017430	S.CER ECJ0EC1H101J	B	24.4/17.7
C622	4030017430	S.CER ECJ0EC1H101J	B	24.4/18.6
C623	4030017430	S.CER ECJ0EC1H101J	B	24.4/16.8
C625	4030016930	S.CER ECJ0EB1A104K	B	42.6/36.4
C626	4030017460	S.CER ECJ0EB1E102K	B	45.2/39.7
C632	4030017460	S.CER ECJ0EB1E102K	B	24.4/21.3
C633	4030017460	S.CER ECJ0EB1E102K	B	53.5/40.2
C636	4030017460	S.CER ECJ0EB1E102K	B	24.4/20.4
C637	4030017430	S.CER ECJ0EC1H101J	B	26.9/33.6
C638	4030017430	S.CER ECJ0EC1H101J	B	26.9/34.1
C639	4030017430	S.CER ECJ0EC1H101J	T	72.1/9.8
C640	4030017460	S.CER ECJ0EB1E102K	B	39/38.8
C641	4030017460	S.CER ECJ0EB1E102K	B	24.4/19.5
C642	4030016790	S.CER ECJ0EB1C103K	B	60.6/25.2
C645	4030017460	S.CER ECJ0EB1E102K	B	41/42.5
C646	4030017460	S.CER ECJ0EB1E102K	B	37.3/35.7
C647	4030016930	S.CER ECJ0EB1A104K	B	41.9/42.5
C648	4510008580	S.ELE EEE0JA470SR	B	10.9/21.5
C649	4030016790	S.CER ECJ0EB1C103K	B	17.6/16.7
C650	4030016790	S.CER ECJ0EB1C103K	B	23.1/21.2
C651	4030016930	S.CER ECJ0EB1A104K	B	14.4/17.2
C656	4510008530	S.ELE EEE1HA2R2SR	B	10.5/7.7
C657	4030016790	S.CER ECJ0EB1C103K	B	21.7/8.4
C658	4030016930	S.CER ECJ0EB1A104K	B	33.3/34.9
C659	4510008580	S.ELE EEE0JA470SR	B	10.9/14.1
C660	4030016790	S.CER ECJ0EB1C103K	B	23.3/40.8
C661	4030017460	S.CER ECJ0EB1E102K	B	17.9/49.0
C663	4030016790	S.CER ECJ0EB1C103K	B	29.3/36.5
C664	4030016790	S.CER ECJ0EB1C103K	B	11.6/17.8
C667	4030017400	S.CER ECJ0EC1H220J	B	31.4/36.7
C668	4030017400	S.CER ECJ0EC1H220J	B	31.4/37.8
C669	4030016930	S.CER ECJ0EB1A104K	B	29.1/34.4
C670	4030016930	S.CER ECJ0EB1A104K	B	31.6/33.5
C671	4030016930	S.CER ECJ0EB1A104K	B	39.9/37.1
C672	4030016790	S.CER ECJ0EB1C103K	B	36.1/35.8
C673	4030016930	S.CER ECJ0EB1A104K	B	39.7/42.5
C674	4030017460	S.CER ECJ0EB1E102K	B	40.2/38.5
C675	4030016790	S.CER ECJ0EB1C103K	B	39/37.2
C676	4030016790	S.CER ECJ0EB1C103K	B	41.4/36.7
C678	4030016790	S.CER ECJ0EB1C103K	B	40.2/39.4
C679	4030017480	S.CER C1608 JB 1A 474K-T	B	43.6/35.2
C680	4030017480	S.CER C1608 JB 1A 474K-T	B	47.3/35.2
C681	4030017480	S.CER C1608 JB 1A 474K-T	B	47.3/34
C682	4030017480	S.CER C1608 JB 1A 474K-T	B	47.3/32.8
C683	4030017460	S.CER ECJ0EB1E102K	B	29.4/13.8
C684	4030017460	S.CER ECJ0EB1E102K	B	27/32.2
C685	4030016930	S.CER ECJ0EB1A104K	B	34.9/14
C686	4030016930	S.CER ECJ0EB1A104K	B	40.9/33.9
C690	4030016930	S.CER ECJ0EB1A104K	B	54.4/40.2
C691	4030017730	S.CER ECJ0EB1E471K	B	71.4/40.9
C692	4030017420	S.CER ECJ0EC1H470J	B	72.6/40.9
C698	4030016930	S.CER ECJ0EB1A104K	B	36/8
C699	4030017460	S.CER ECJ0EB1E102K	B	37.1/8
C706	4030017460	S.CER ECJ0EB1E102K	T	102.2/40.1
C708	4030017460	S.CER ECJ0EB1E102K	T	78.2/42.1
C718	4030017460	S.CER ECJ0EB1E102K	B	101.5/32
C719	4030017460	S.CER ECJ0EB1E102K	B	101.5/33.8
C720	4030017460	S.CER ECJ0EB1E102K	B	97.7/33.1
C721	4030016930	S.CER ECJ0EB1A104K	T	90/31
C722	4030016930	S.CER ECJ0EB1A104K	T	85.8/35.2
C723	4030017460	S.CER ECJ0EB1E102K	T	83.8/7.4
C724	4030016930	S.CER ECJ0EB1A104K	T	79.6/21.7
C725	4030016930	S.CER ECJ0EB1A104K	T	78.5/21.7
C726	4030016790	S.CER ECJ0EB1C103K	T	75.3/17.5
C727	4030016790	S.CER ECJ0EB1C103K	T	75.3/18.4
C728	4030017670	S.CER ECJ0EC1H390J	T	76.2/30.3
C729	4030017600	S.CER ECJ0EC1H080C	T	75.3/20.3
C731	4030017680	S.CER ECJ0EC1H820J	T	82.4/21.6
C732	4030018860	S.CER ECJ0EB0J105K	T	84/17.2
C733	4030016790	S.CER ECJ0		

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C753	4030016930	S.CER ECJ0EB1A104K	B	58.1/41.7
C754	4550006250	S.TAN TEESVA 1A 106M8R	T	100.1/24.7
C755	4030016930	S.CER ECJ0EB1A104K	T	96.5/14.2
C756	4030017680	S.CER ECJ0EC1H820J	T	79.7/25.7
C757	4030016790	S.CER ECJ0EB1C103K	T	78.1/25.9
C758	4030016790	S.CER ECJ0EB1C103K	T	75.7/23.6
C759	4030017380	S.CER ECJ0EC1H050B	T	79.4/29.7
C769	4030017460	S.CER ECJ0EB1E102K	B	77.8/34.8
C770	4030017420	S.CER ECJ0EC1H470J	B	96.8/34.2
C771	4030017770	S.CER ECJ0EB1E332K	T	71.6/15.2
C773	4030017570	S.CER ECJ0EC1H040B	B	71.8/31.1
C774	4030017350	S.CER ECJ0EC1H020B	B	71/32.5
C775	4030017570	S.CER ECJ0EC1H040B	B	73.1/25.7
C776	4030017640	S.CER ECJ0EC1H150J	B	88.1/22.4
C777	4030017460	S.CER ECJ0EB1E102K	B	84.9/23.9
C778	4030016930	S.CER ECJ0EB1A104K	T	98.8/7
C779	4030017460	S.CER ECJ0EB1E102K	B	7.2/35.4
C780	4030017520	S.CER ECJ0EC1H0R3B	B	98.9/39.5
C781	4030017570	S.CER ECJ0EC1H040B	B	93/40
C782	4030017350	S.CER ECJ0EC1H020B	B	90.3/40.3
C783	4030017590	S.CER ECJ0EC1H070C	B	71.3/25.7
C784	4030017590	S.CER ECJ0EC1H070C	B	69.2/26.1
C785	4030016790	S.CER ECJ0EB1C103K	T	53.7/12.9
C791	4030017530	S.CER ECJ0EC1H0R5B	B	80.5/27.5
C792	4030016790	S.CER ECJ0EB1C103K	B	34.8/37
C793	4030016790	S.CER ECJ0EB1C103K	B	90.3/29.2
C794	4030017460	S.CER ECJ0EB1E102K	B	86.4/22
C795	4030016790	S.CER ECJ0EB1C103K	B	84.6/15.4
C796	4030017460	S.CER ECJ0EB1E102K	B	96.6/26.9
C797	4030017780	S.CER ECJ0EB1E472K	B	91.8/27.1
C799	4030017460	S.CER ECJ0EB1E102K	B	51.1/27.7
C800	4030016790	S.CER ECJ0EB1C103K	T	90.9/14.7
J2	6450000131	CNR HSJ1102-018540	B	
J3	6510016381	S.CNR 52465-1071	B	20/32.1
J4	6510021901	S.CNR BM02B-ASRS-TF (LF) (SN)	T	89.4/4.5
J5	6450002250	CNR HSJ1456-010320	B	
DS1	5030003070	LCD S11313 <SUC>		
DS2	5040002961	S.LED SML-A12MT T86J	T	57.3/5.8
DS3	5040002961	S.LED SML-A12MT T86J	T	57.3/40.3
MC1	7700002760	MIC EM6027P-46C33-G-01		
S23	2260002840	SW SKHLLFA010		
S24	2230001060	S.SW EVQ-PUL 02K	T	102.2/36.1
S25	2260002800	S.SW SW-167 (SKQTLAE010)	B	99.5/44.2
S26	2260002800	S.SW SW-167 (SKQTLAE010)	B	61/44.2
S27	2260002800	S.SW SW-167 (SKQTLAE010)	B	51.5/44.2
EP5	6910012350	S.BEA MMZ1608Y 102BT	T	84.4/3.8
EP7	6910012350	S.BEA MMZ1608Y 102BT	T	78.1/5.4
EP8	6910018460	S.BEA MMZ1005Y102C-T	B	73.7/11.4
EP11	6910014730	S.BEA MPZ2012S331A-T	T	67.8/7.3
EP13	6910015370	S.BEA ACZ1005Y-102-T	B	74.2/29.2
EP14	6910015370	S.BEA ACZ1005Y-102-T	B	74.9/26.6
EP19	6910014730	S.BEA MPZ2012S331A-T	T	68.2/5.5
EP20	8930063020	LCT SRCN-2721-SP-N-W		

## [PA UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC27	1110006490	S.IC LMV321IDCKR	B	17.2/22
Q2	1560001371	S.FET RD12MVS1-T112	B	22.6/8.3
Q3	1560001241	S.FET RD01MUS1-T113	B	16/7.9
Q4	1530002241	S.TR 2SC3775-3-TB-E	T	6/10.4
D1	1710000871	S.DIO HVU131TRF-E	T	35.2/14.2
D2	1790001240	S.DIO MA2S728-(TX)	B	30.8/11.6
D3	1790001240	S.DIO MA2S728-(TX)	B	28.2/13.2
D8	1710000871	S.DIO HVU131TRF-E	B	27.4/19.7
D74	1790001240	S.DIO MA2S728-(TX)	T	29.1/16.9
D75	1790001240	S.DIO MA2S728-(TX)	B	26.4/15.7
D76	1790001240	S.DIO MA2S728-(TX)	B	29.5/10.8
D77	1790001240	S.DIO MA2S728-(TX)	T	28.2/18.6
L3	6200013110	S.COL 0.35-1.6-9TL 52.0N <COMO>	T	32.8/17.5
L4	6200001520	S.COL MLF2012D R82K-T	B	36.1/14.9
L5	6200012460	S.COL 0.30-1.7-8TL 54N <COMO>	T	32.8/11.9
L6	6200012560	S.COL 0.30-0.7-3TR 3.4N <COMO>	T	21.6/16.6
L7	6200013030	S.COL 0.35-1.6-6TL 31.0N <COMO>	T	18.5/16.7
L8	6200005711	S.COL ELJRE 27NGFA	B	17.4/14
L10	6200005731	S.COL ELJRE 39NGFA	B	15.3/13.1
L11	6200005741	S.COL ELJRE 47NGFA	B	11/10.3
L12	6200007001	S.COL ELJRE 82NGFA	B	8.8/9.5
L15	6200002380	S.COL LQW31HN56NJ03L	B	29.2/15.9
L46	6200012870	S.COL 0.30-1.4-5TR 23.5N <COMO>	T	25.3/13.8
R2	7030000290	S.RES MCR10EZHZ 180 (181)	B	33.9/12
R3	7030005090	S.RES ERJ2GEJ 104 X (100 k)	T	26.3/20.6
R4	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	27.2/20.3
R5	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	20.1/21.6
R6	7030005050	S.RES ERJ2GEJ 103 X (10 k)	B	16.9/19
R7	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	B	28.4/11.2
R8	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	B	26.3/17.4
R9	7030005000	S.RES ERJ2GEJ 471 X (470)	B	27.2/13.2
R10	7030005000	S.RES ERJ2GEJ 471 X (470)	B	31.3/8.1
R13	7030005070	S.RES ERJ2GEJ 683 X (68 k)	B	20.1/22.5
R14	7030005040	S.RES ERJ2GEJ 472 X (4.7 k)	B	20.6/18.6
R15	7030009200	S.RES ERJ2GEJ 390 X (39)	B	19.2/15.8
R16	7030005060	S.RES ERJ2GEJ 333 X (33 k)	B	20.1/17.4
R17	7030005220	S.RES ERJ2GEJ 223 X (22 k)	B	9.2/13.9
R18	7030004990	S.RES ERJ2GEJ 221 X (220)	B	13.1/11.1
R19	7510001461	S.TMR NTCG16 3NH 471JT	B	7.7/11.6
R20	7030000270	S.RES MCR10EZHZ 120 (121)	B	6.4/8.6
R21	7030005120	S.RES ERJ2GEJ 102 X (1 k)	T	5.5/12.6
R22	7030007290	S.RES ERJ2GEJ 222 X (2.2 k)	T	7.2/14
R219	7030000070	S.RES MCR10EZHZ 2.7 (2R7)	B	19.1/13.4
R250	7030005530	S.RES ERJ2GEJ 100 X (10)	T	5.6/13.6
R320	7030007300	S.RES ERJ2GEJ 332 X (3.3 k)	B	21/17.4
R321	7510001661	S.TMR NTCG16 4LH 473JT	B	22.1/17.9
R322	7030005600	S.RES ERJ2GEJ 273 X (27 k)	B	23.4/17
R323	7030009140	S.RES ERJ2GEJ 272 X (2.7 k)	B	23.1/18.2
R331	7030005120	S.RES ERJ2GEJ 102 X (1 k)	B	5.6/12.8
R332	7030010040	S.RES ERJ2GEJ JPW	B	5.8/11.8
R333	7030005600	S.RES ERJ2GEJ 273 X (27 k)	B	5.8/10.9
R767	7030005080	S.RES ERJ2GEJ 823 X (82 k)	B	15.7/20.1
R768	7030004980	S.RES ERJ2GEJ 101 X (100)	B	15.4/22
R770	7030005000	S.RES ERJ2GEJ 471 X (470)	T	28/16.6
R771	7030009320	S.RES ERJ2GEJ 4R7 X (4.7)	B	13.1/10.2
R843	7030000290	S.RES MCR10EZHZ 180 (181)	B	33.9/9.9
R844	7030005290	S.RES ERJ2GEJ 682 X (6.8 k)	T	26.8/18.9
R845	7030000010	S.RES MCR10EZHZ JPW (000)	B	13.2/17.2
R846	7030000010	S.RES MCR10EZHZ JPW (000)	T	15.9/15.6
C5	4030017650	S.CER ECJ0EC1H270J	T	30.9/18.3
C6	4030017360	S.CER ECJ0EC1H030B	T	34.7/16.6
C7	4030017400	S.CER ECJ0EC1H220J	T	30.7/16.6
C8	4030017460	S.CER ECJ0EB1E102K	T	32.3/14.8
C9	4030006860	S.CER C1608 JB 1H 102K-T	B	34/13.5
C10	4030017460	S.CER ECJ0EB1E102K	T	35.1/12.5
C11	4030017550	S.CER ECJ0EC1H1R5B	B	30.8/9.7
C13	4030017400	S.CER ECJ0EC1H220J	T	31.1/9.5
C14	4030007050	S.CER C1608 CH 1H 220J-T	T	29.2/13.8
C15	4030017550	S.CER ECJ0EC1H1R5B	B	29.5/14
C19	4030007170	S.CER C1608 CH 1H 221J-T	T	29.2/15
C23	4030017760	S.CER ECJ0EB1H222K	B	19.9/23.5
C24	4030017460	S.CER ECJ0EB1E102K	T	12.4/14.7
C25	4030017460	S.CER ECJ0EB1E102K	B	19/17.4
C26	4550007750	S.TAN TEESVA 1V 225M8R	T	13.9/15.6
C28	4030017730	S.CER ECJ0EB1E471K	T	17/19.9
C29	4030017460	S.CER ECJ0EB1E102K	B	7.5/7
C30	4030017670	S.CER ECJ0EC1H390J	B	17/12.3
C31	4030017460	S.CER ECJ0EB1E102K	B	13.8/18.6
C32	4030017460	S.CER ECJ0EB1E102K	B	11.3/11.6
C33	4030017460	S.CER ECJ0EB1E102K	B	5.8/10
C34	4030017620	S.CER ECJ0EC1H100C	B	10.4/11.6
C35	4030017500	S.CER ECJ0EC1H560J	B	9.2/11.2
C53	4030007050	S.CER C1608 CH 1H 220J-T	B	32.5/15.6
C54	4030017400	S.CER ECJ0EC1H220J	B	28.8/18.5
C56	4030017460	S.CER ECJ0EB1E102K	B	25.9/18.3
C98	4030017460	S.CER ECJ0EB1E102K	B	31.8/12.3
C212	4030007080	S.CER C1608 CH 1H 390J-T	T	27.3/13.9
C296	4030017460	S.CER ECJ0EB1E102K	T	20/20
C297	4030007150	S.CER C1608 CH 1H 151J-T	T	23.3/13.9
C350	4030016790	S.CER ECJ0EB1C103K	B	14.5/12.8
C352	4030016790	S.CER ECJ0EB1C103K	T	16.8/23.4
C429	4030017460	S.CER ECJ0EB1E102K	T	17.9/14
C712	4030017420	S.CER ECJ0EC1H470J	B	17.6/20.3
C713	4030017550	S.CER ECJ0EC1H1R5B	T	29.7/18.9

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

**[PA UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C717	4030017460	S.CER ECJ0EB1E102K	T	20.3/21.9
C764	4030016930	S.CER ECJ0EB1A104K	T	18.8/14
C765	4030017460	S.CER ECJ0EB1E102K	B	11.6/15.5
C766	4030017460	S.CER ECJ0EB1E102K	B	19.4/19.8
C770	4030017460	S.CER ECJ0EB1E102K	B	5.9/14.2
C790	4030017460	S.CER ECJ0EB1E102K	T	5.3/14.5
C791	4030007110	S.CER C1608 CH 1H 680J-T	B	25.2/12.9
C792	4030017640	S.CER ECJ0EC1H150J	T	25.3/15.6
C793	4030017420	S.CER ECJ0EC1H470J	T	17/13.7
C794	4030017420	S.CER ECJ0EC1H470J	T	11.5/14.6
C795	4030017420	S.CER ECJ0EC1H470J	B	12.5/15.5
C796	4030017420	S.CER ECJ0EC1H470J	B	15.6/17.2
J1	6910017680	CNR IMSA-9230B-1-04Z140-PT1		
J2	6910017680	CNR IMSA-9230B-1-04Z140-PT1		
J3	6910017680	CNR IMSA-9230B-1-04Z140-PT1		

**[ANT UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
L1	6200012910	S.COL 0.35-1.6-8TL 45.5N	T	3.6/12.1
L45	6200013110	S.COL 0.35-1.6-9TL 52.0N	T	3.5/8.3
R338	7030005080	S.RES ERJ2GEJ 823 X (82 k)	T	3.8/14
C210	4030007050	S.CER C1608 CH 1H 220J-T	T	7.5/8.3
C211	4030006980	S.CER C1608 CH 1H 070D-T	T	5.6/7.2
C212	4030017350	S.CER ECJ0EC1H020B	T	5.5/9.7

**[DC UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C125	4030017460	S.CER ECJ0EB1E102K	T	4.6/6.1
C126	4030006900	S.CER C1608 JB 1H 103K-T	T	7.4/8.2
J1	6910015881	CNR 9230B-1-02Z141-PT1		
EP17	6910014640	S.BEA MPZ2012S221A-T	T	7.1/5.8
EP18	6910014640	S.BEA MPZ2012S221A-T	T	5.8/8.2

## SECTION 5

## MECHANICAL PARTS

## [CHASSIS PARTS]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510026010	BNC-R170	1
J2	6910015860	IMSA-6277S-O2A-G	1
SP1	2510001360	K036NAX040A00-55	1
W1	8900009640	OPC-963	1
MP1	8010020410	2927 CHASSIS	1
MP2	8210024590	2927 S-FRONT PANEL (B) (Incl. MP3, 4, 5, 6, 9, 10, 12)	1
	8210024580	2927 T-FRONT PANEL (B) (Incl. MP3, 4, 5, 6, 9, 10, 12)	1
MP3	8210022790	2927 PTT PANEL	1
MP4	8930069520	2927 PTT BUTTON	1
MP5	8930074420	3074 PTT RUBBER	1
MP6	8930073610	SP NET (D)	1
MP8	8210020550	2721 REAR PANEL	1
MP9	8310070990	2927 WINDOW PLATE (B)	1
MP10	8930069510	2927 WINDOW SHEET	1
MP12	8930074360	2927 4-KEY (D)	1
	8930074370	2927 KEYBOARD (A)	1
	8930070100	2927 MAIN SEAL (A)	1
MP13	8930063060	2721 T-RUBBER	1
MP14	8930069460	2927 SIDE PLATE	1
MP16	8930069470	2927 TOP PLATE	1
MP17	8930061880	2721 MIC SPONGE	1
MP20	8930059360	2600 RELEASE BUTTON	1
MP21	8930070362	2775 RELEASE PLATE (A)-2	1
MP22	8610007510	KNOB SPRING NO.7800	1
MP23	8610012970	KNOB N-350 (Incl. MP23)	1
MP24	8830003040	3017 ANT NUT	1
MP25	8810009561	SCREW BT B0 2X6 NI-ZK3 (BT)	2
MP26	8810009221	SCREW BT B0 2X8 NI-ZK3 (BT)	2
MP27	8810008641	OTap 1Flat washer B0 2X4 NI-ZC3 (BT)	11
MP28	8810010430	SCREW TRUSS M3X5 SUS SSBC	1
MP31	8310066810	2927 OPTION PLATE	1
MP32	8930046020	1123 SHEET (A)-1	1
MP33	8930056540	PUSH SPRING (AH)	2
MP34	8830001701	VR NUT (Q)-1	1
MP35	8930048870	2056 A-SPONGE	1
MP36	8930070010	2893 VOL RUBBER	1
MP37	8210022780	2927 JACK PANEL	1
MP42	8810004861	SCREW PH M2X6 ZK3	2

## [PA UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1*	6910017680	9230B-1-04Z140-PT1	1
J2*	6910017680	9230B-1-04Z140-PT1	1
J3*	6910017680	9230B-1-04Z140-PT1	1
MP1*	8410002531	2681 PA HEATSINK-1	1
MP2*	8510018750	3074 PA SHIELD PLATE	1

## [ANT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
MP1*	8510017640	2927 ANT PLATE	1

## [DC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6910015881	9230B-1-02Z141-PT1	1

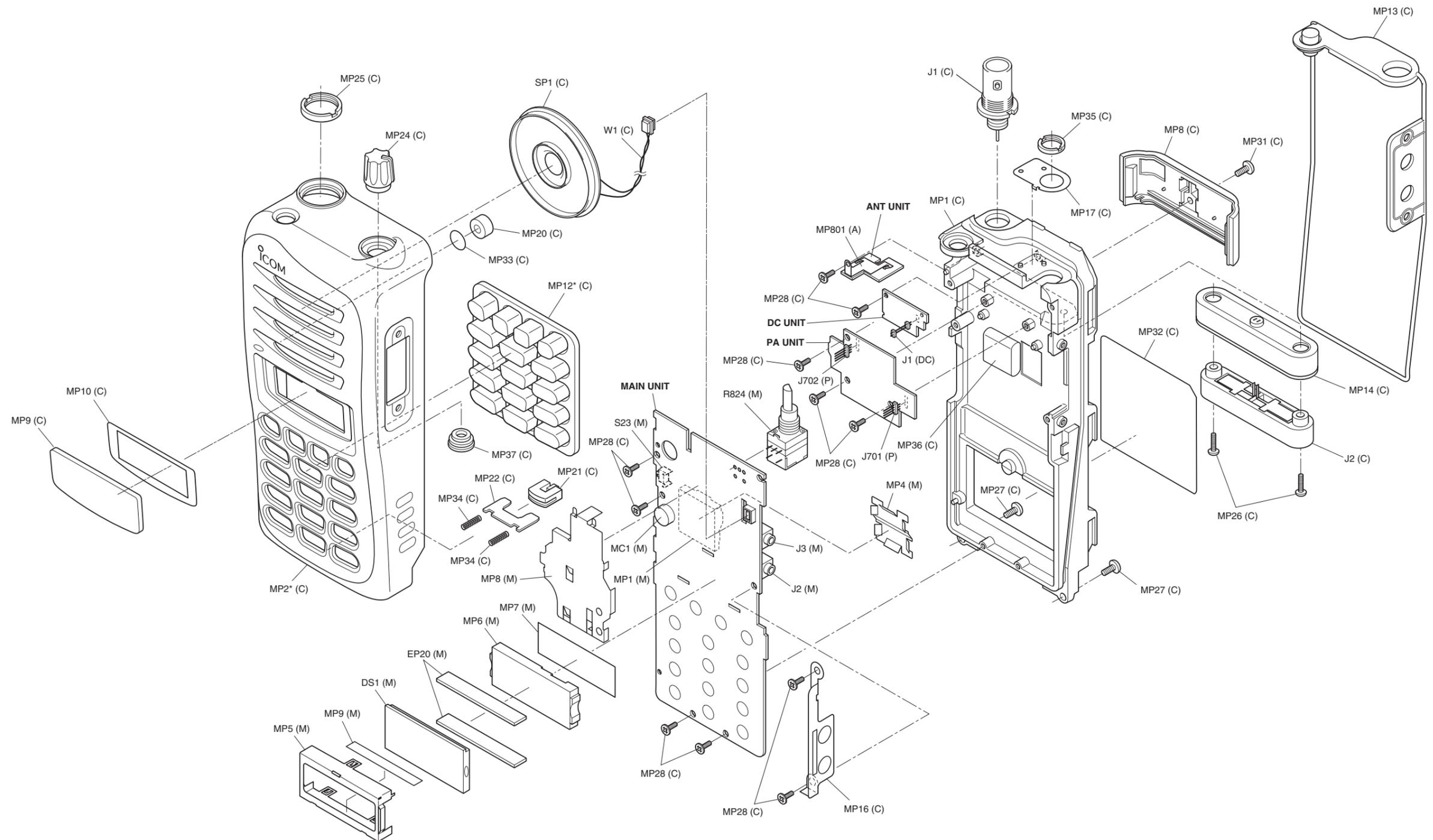
## [ACCESSORIES]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
EP1	3310002130	FA-B02AR	1
EP2	(Optional)	BP-232N [IC-A14] only	1
EP3	(Optional)	BC-179 [IC-A14]only	1
EP4	(Optional)	BC-174A [USA] only	1
	(Optional)	BC-174E [EXP] only	1
EP5	(Optional)	BP-261 except [USA-01], [EXP-01]	1
EP6	6910018620	BLACK HANDY STRAP	1
MP1	(Optional)	MB-94	1

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J2*	6450000131	HSJ1102-018540	1
J3*	6510016381	52465-1071	1
J4*	6510021901	BM02B-ASRS-TF (LF) (SN)	1
J5*	6450002250	HSJ1456-010320	1
DS1	5030003070	S11313	1
MC1	7700002760	EM6027P-46C33-G-01	1
S23	2260002840	SKHLLFA010	1
S24*	2230001060	EVQ-PUL 02K	1
S25*	2260002800	SW-167 (SKQT)	1
S26*	2260002800	SW-167 (SKQT)	1
S27*	2260002800	SW-167 (SKQT)	1
EP20	8930063020	SRCN-2721-SP-N-W	2
MP3*	8510016130	2721 VCO CASE	1
MP4	8510016120	2721 VCO COVER	1
MP5	8930069480	2927 LCD HOLDER	1
MP6	8210020570	2721 REFLECTOR	1
MP7	8930070080	WHITE SHEET (V)	1
MP8	8510017720	2927 MAIN SHIELD	1

\*: Refer to SECTION 7 "BOARD LAYOUTS."

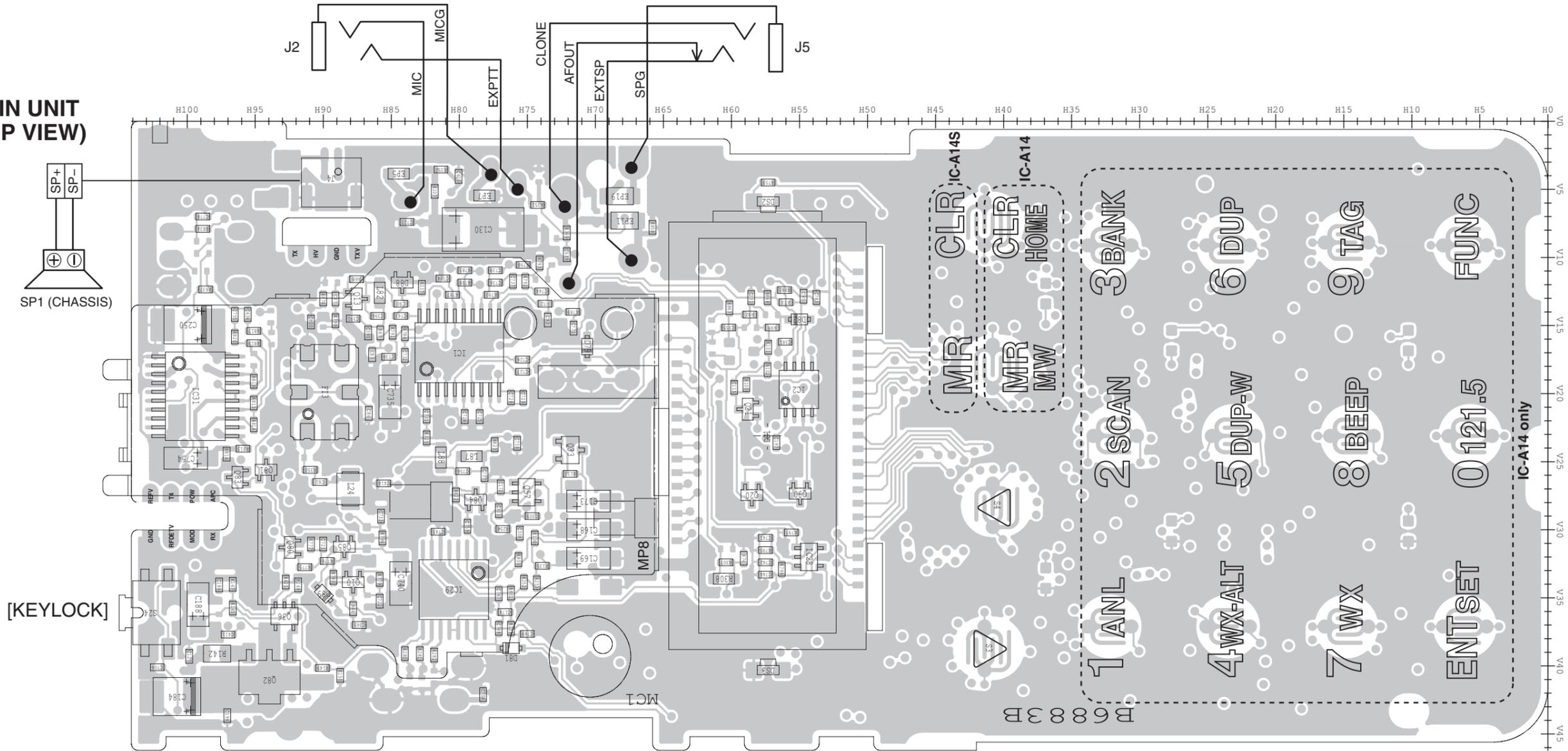


**UNIT abbreviations** (C): CHASSIS PARTS, (M): MAIN UNIT, (P): PA UNIT, (DC): DC UNIT, (A): ANT UNIT  
 \* MP2 (C), MP12 (C): The shape is depending on the version.

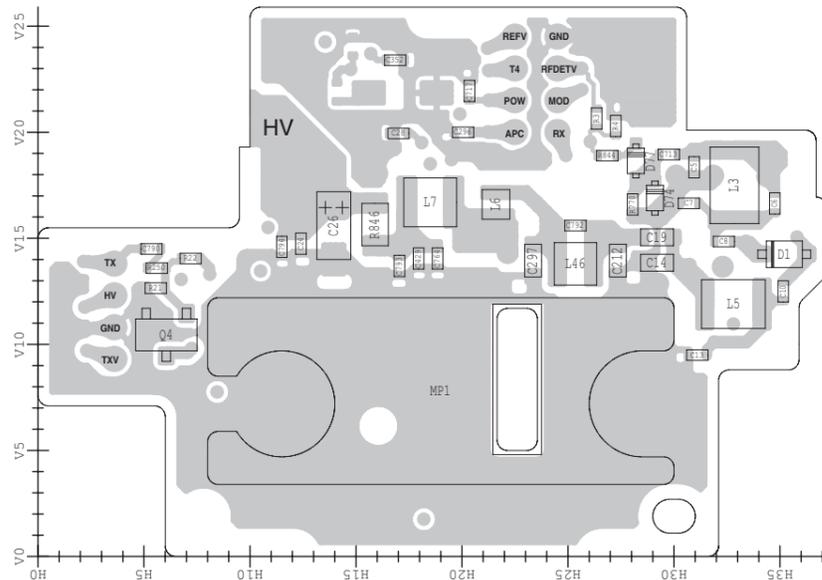
SECTION 7

BOARD LAYOUTS

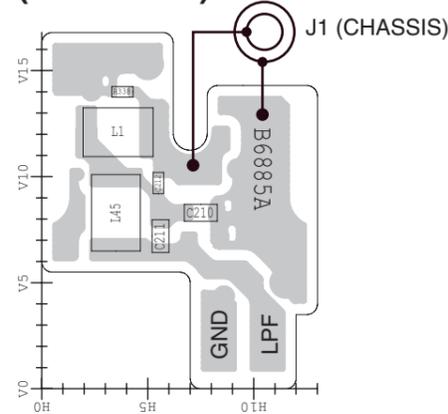
• MAIN UNIT (TOP VIEW)



• PA UNIT (TOP VIEW)

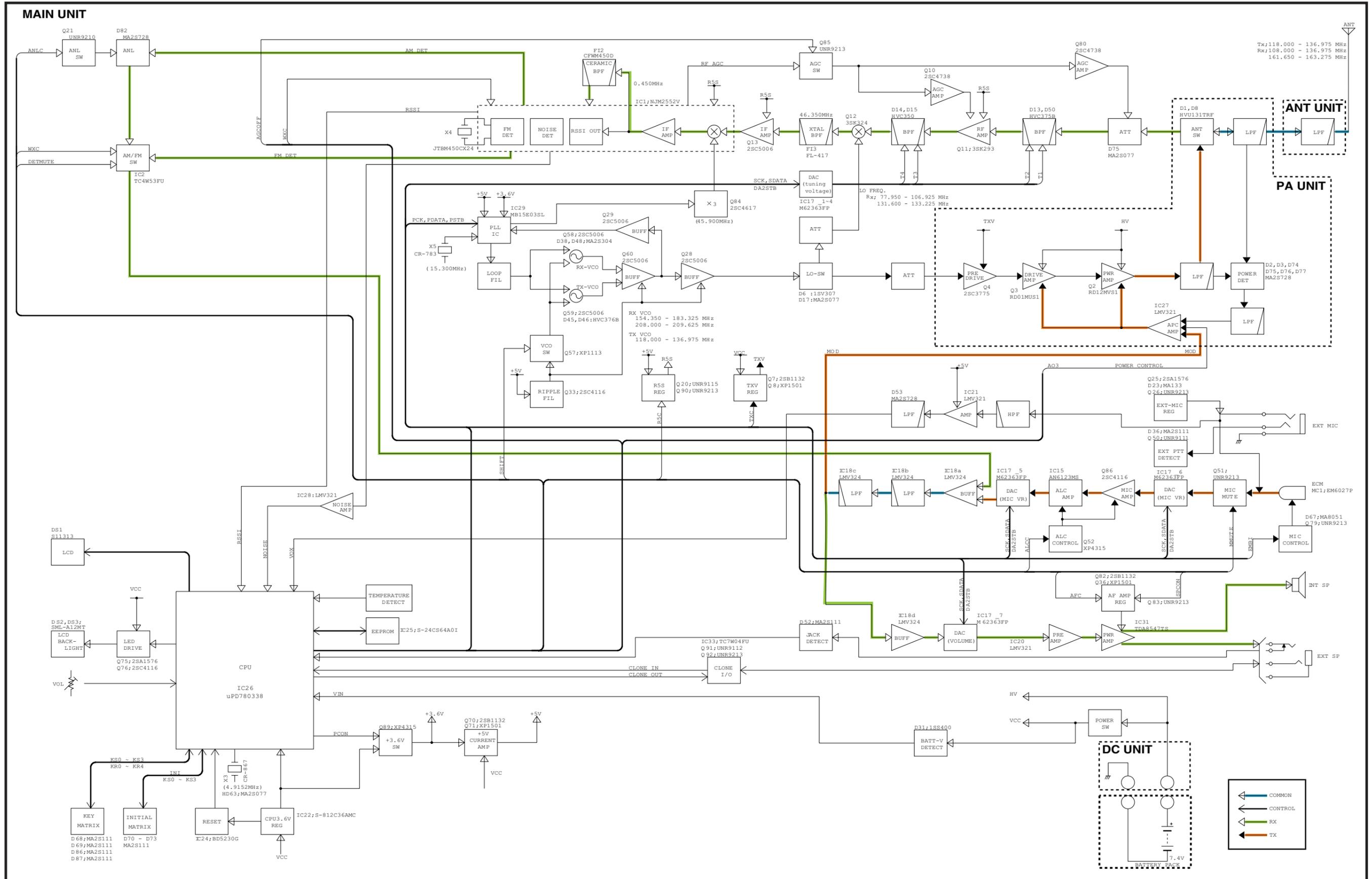


• ANT UNIT (TOP VIEW)



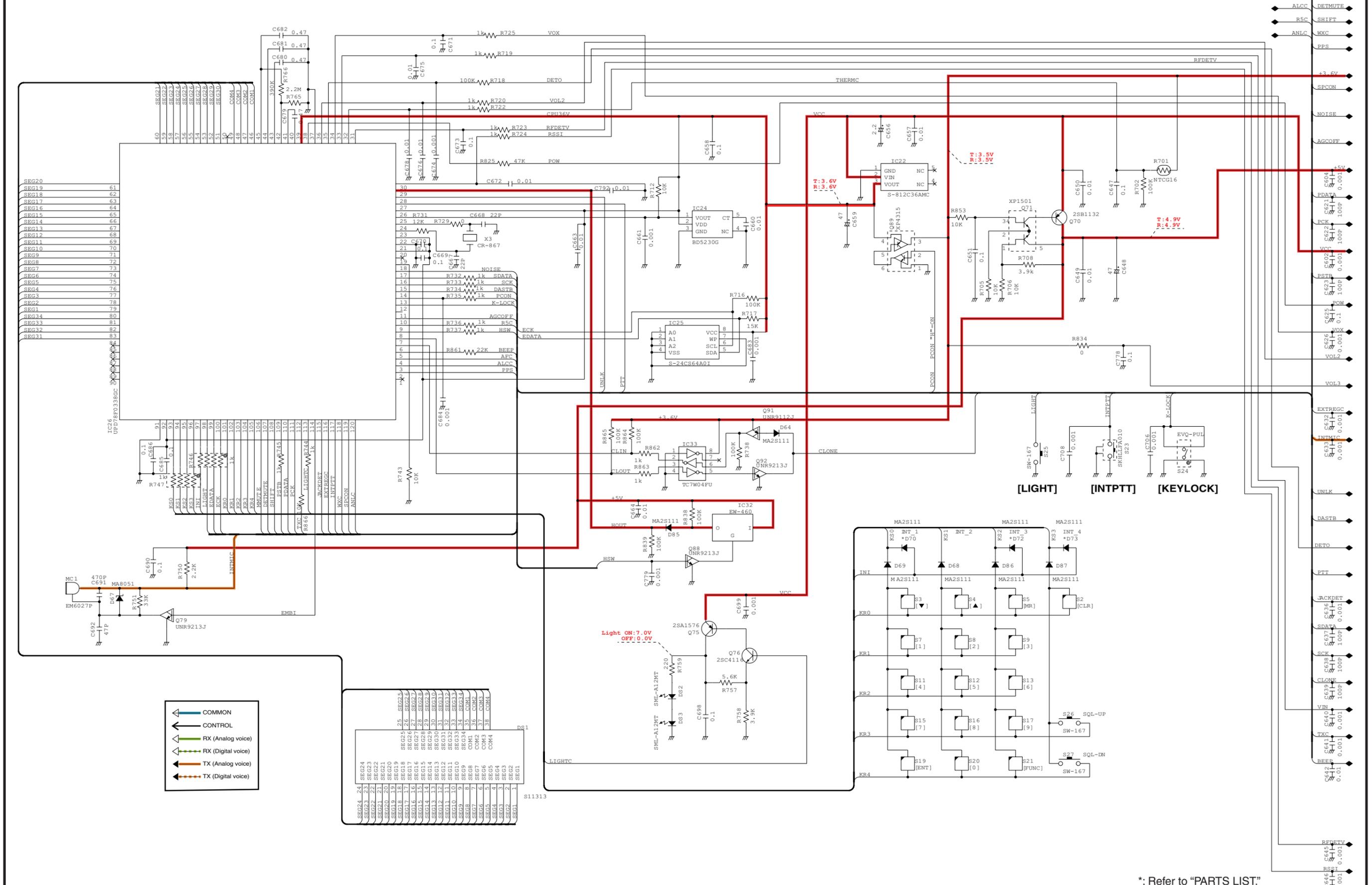


**SECTION 8 BLOCK DIAGRAM**



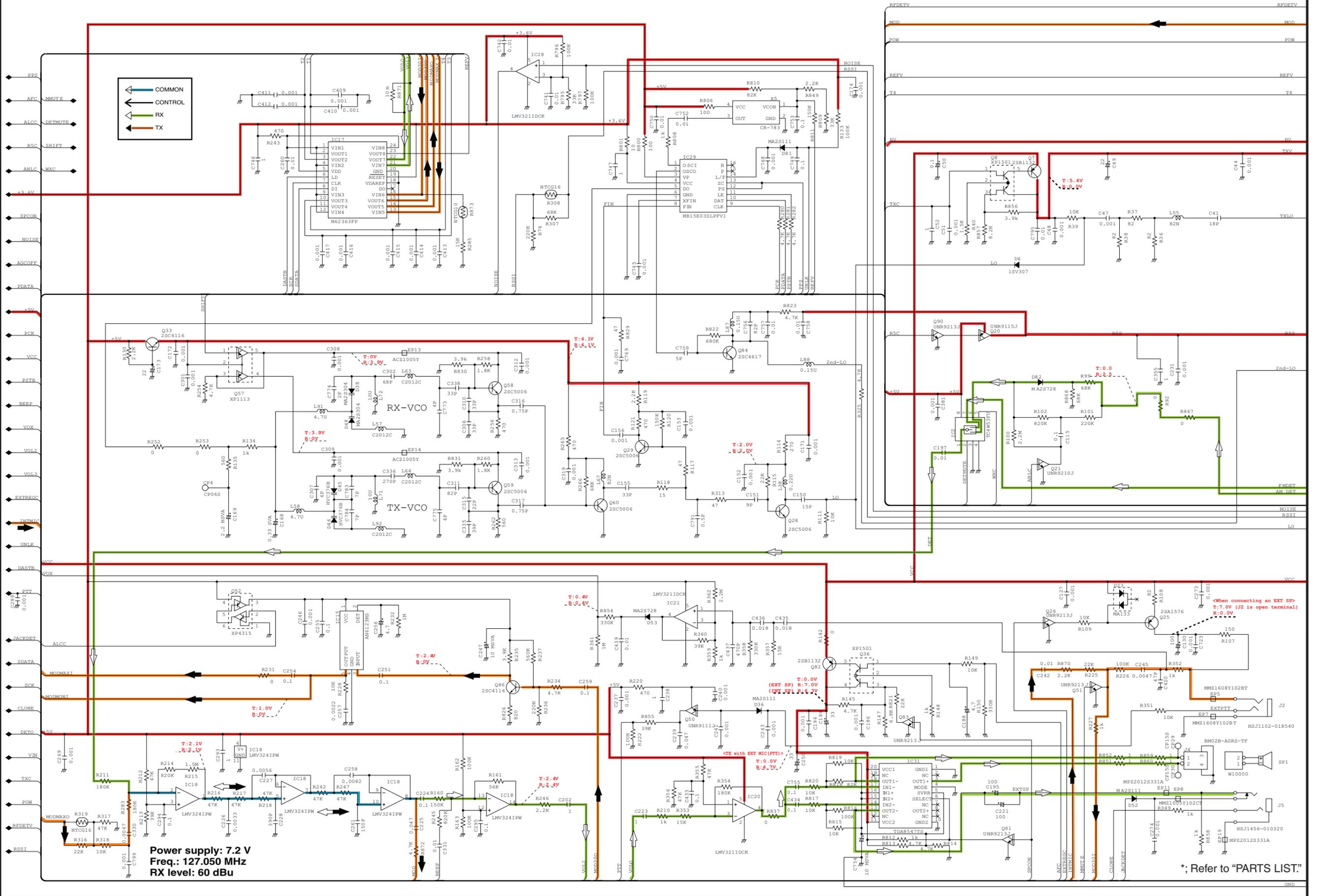
SECTION 9 VOLTAGE DIAGRAM

MAIN UNIT (Left side)



\*; Refer to "PARTS LIST."

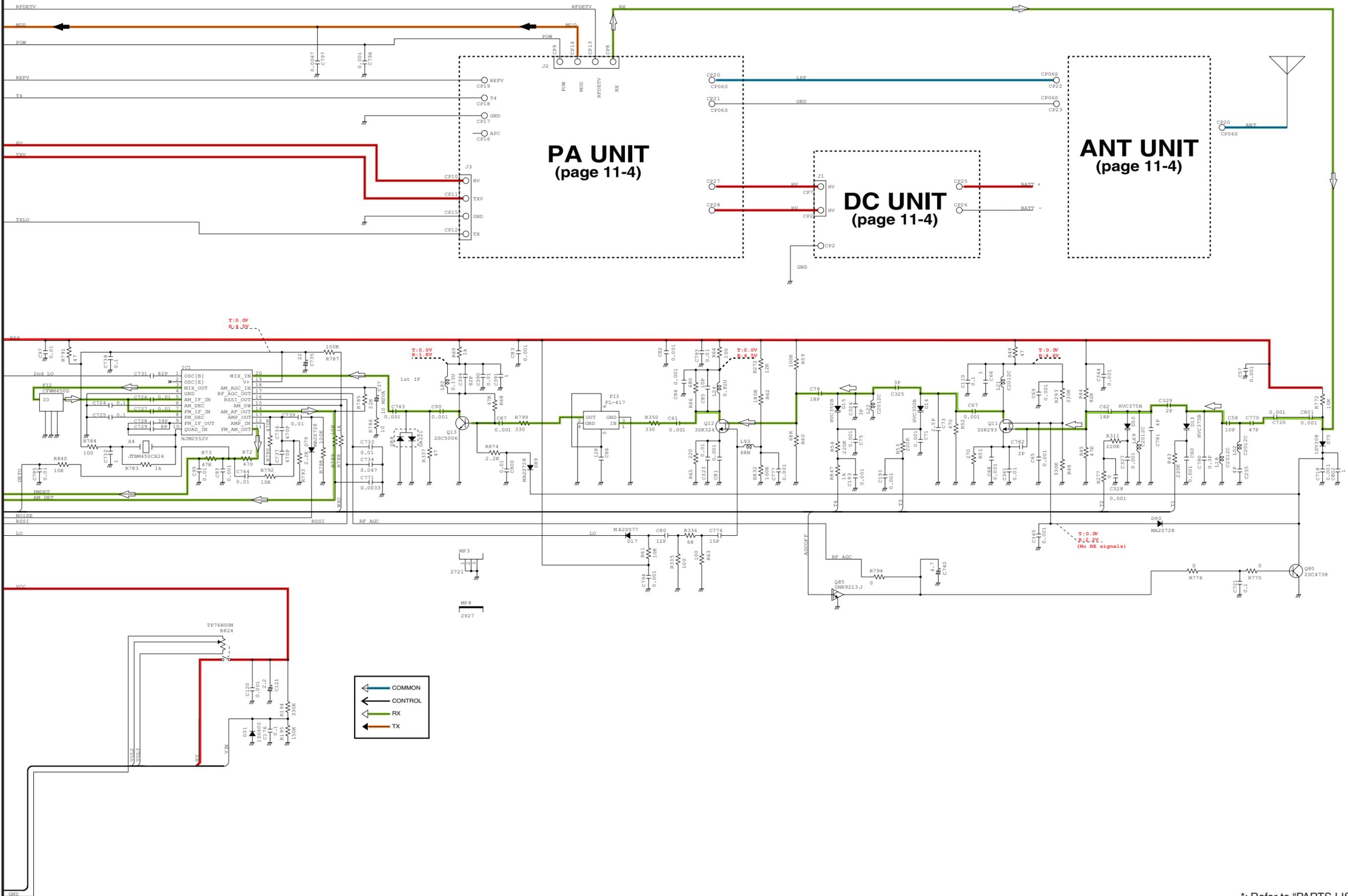
MAIN UNIT (Center)



Power supply: 7.2 V  
 Freq.: 127.050 MHz  
 RX level: 60 dBu

\* Refer to "PARTS LIST."

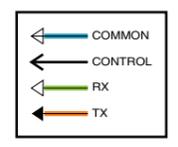
MAIN UNIT (Right side)



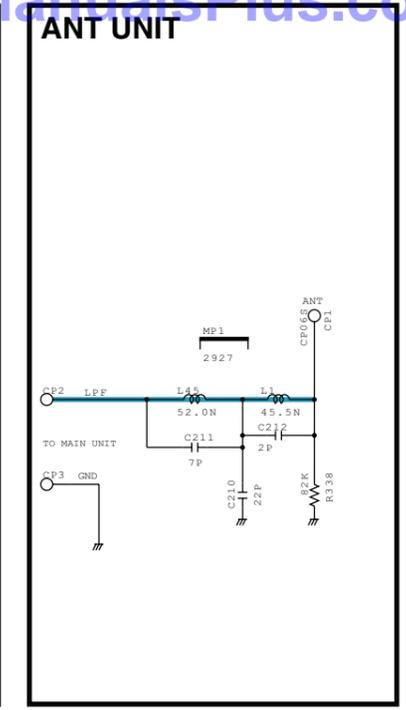
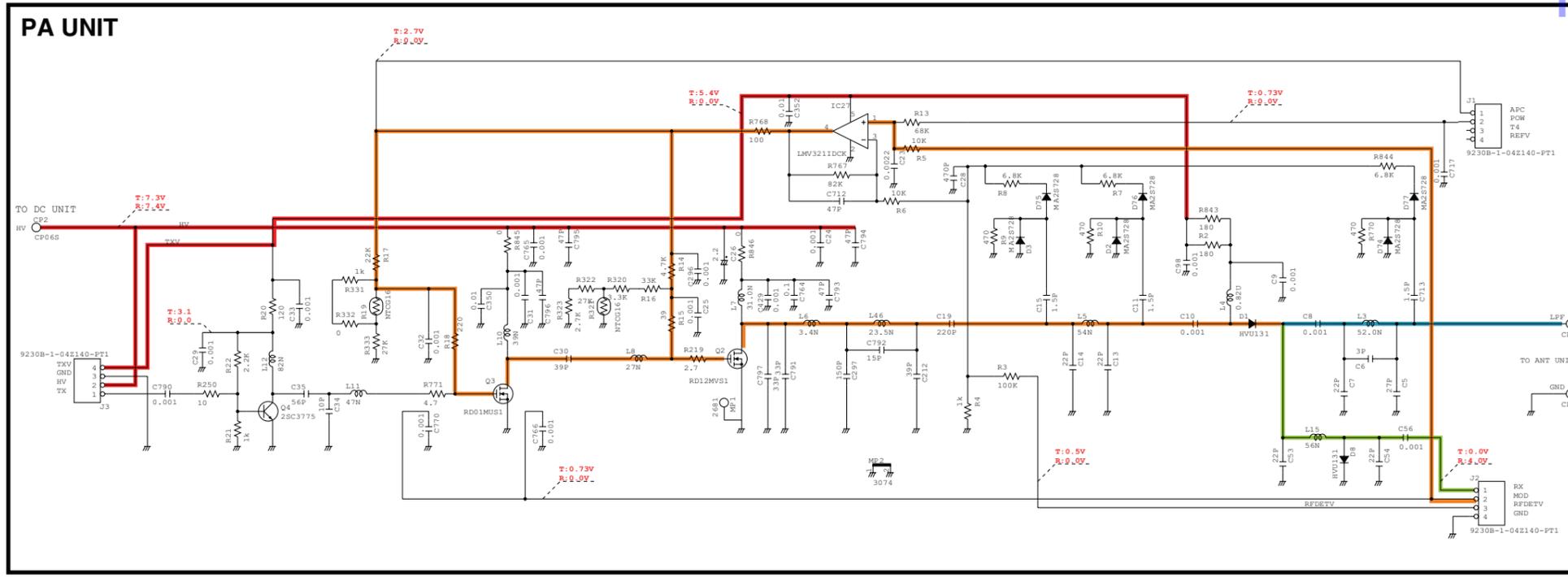
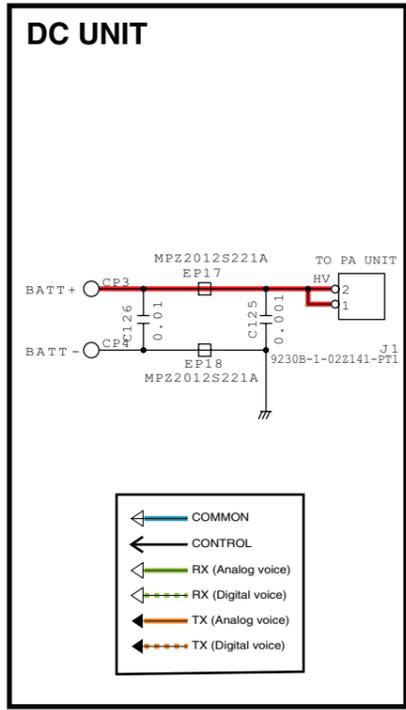
**PA UNIT**  
(page 11-4)

**DC UNIT**  
(page 11-4)

**ANT UNIT**  
(page 11-4)



\*; Refer to "PARTS LIST."



\*; Refer to "PARTS LIST"

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