Service Manual
DJ-175

Specifications

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Exploded View

PC Board View

Adjustment

Schematic Diagram

Block Diagram

ALINCO, INC.

SPECIFICATIONS DJ-175

<GRNERAL>

Frequency range:	T:	TX 144 ~ 147.995MHz	*144 ~ 147.995MHz
		RX 136 ~ 173.995MHz	*144 ~ 147.995MHz
	E:	TX 144 ~ 145.995MHz	*144 ~ 145.995MHz
		RX 144 ~ 145.995MHz	*144 ~ 145.995MHz
	TFH:	TX 136 ~ 173.995MHz	*150 ~ 173.995MHz
		RX 136 ~ 173.995MHz	*150 ~ 173.995MHz

        * Guaranteed range per specifications

Modulation:	F3E (FM), F2D* *T/E models only
Channel steps:	5, 10, 12.5, 20, 25 & 30KHz
Memory channels:	200 channels + 1 CALL channel + 1 Repeater-Access function memory
Antenna impedance:	50Ω unbalanced
Frequency stability:	+/- 2.5ppm
Microphone impedance:	2k ohm nominal
Power supply:	7.2V/ 7.4V (Battery only)
Current drain (Approx.):	1.5A Transmit high at 5W
	250mA Receive at 500mW
	70mA Stand-by
	30mA Battery save on
Temperature range:	-10 ~ +45°C (+14 ~ 113°F)
Ground:	Negative ground
Dimension:	58(W) x 107.5(H) x 36.3(D) mm
	2.28(W) x 4.23(H) x 1.43(D) inches
Weight:	Approx. 245g/ 8.7oz with EBP-72 & antenna
DTMF:	16 Buttons Keypad
Subaudible Tone (CTCSS):	encode/ decode 39 tones
Digital Code SQ. (DCS):	encode/ decode 104 codes

<TRANSMITTER>

Output power (Approx.):	5W (High)/ 2W (Middle)/ 0.5W (Low)
Modulation	Variable reactance frequency modulation
Max. deviation	$\pm$5KHz
	($\pm$2.5KHz)**
Spurious emission	–60dB or less

<RECEIVER>

Receive system	Double conversion superheterodyne
Intermediate frequencies	1st: 21.7MHz / 2nd: 450KHz
Sensitivity (12dB SINAD)	-14dBμ (0.2μV)
Selectivity	-6dB: 12KHz or more/ -60dB: 26KHz or less
	(-6dB: 6KHz or more/ -60dB: 14KHz or less)**
Audio output power	500mW (8Ω, MAX)
	400mW (8Ω, 10% THD)

**Narrow FM models are available depending on areas of distribution.

CIRCUIT DESCRIPTION

1) Receiver System

The receiver system is a double superheterodyne system with a 21.7MHz first IF and a 450kHz second IF.

1.Front End

The received signal at frequency in the 136~173.995MHz (E version: 144~145.995MHz) range is passed through the low-pass filter (L101, L102, L104, L118, C101, 108, C109, C110, C117, C118, C119, C123, C124, C125, C126, C127, and C188) and tuning circuit (C255, C256, C257, C258, D120, L138, and L139) and amplified by the RF amplifier (Q119). The signal from Q119 is then passed through the tuning circuit (C242, C243, C244, C245, C269, C270, C271, D117, D118, D119, L135, L136, and L137) and converted into 21.7MHz by the mixer (Q118).

The tuning circuit, which consists of L139, L135, L136, varicaps D117, D118, D119, and D120 is controlled by the tracking voltage from the CPU so that it is optimized for the reception frequency. The local signal from the VCO is passed through the buffer (Q115), and supplied to the source of the mixer (Q118). The radio uses the lower side of the superheterodyne system.

2. IF Circuit

The mixer mixes the received signal with the local signal to obtain the sum of and difference between them. The crystal filter (FL101, and FL102) selects 21.7MHz frequency from the results and eliminates the signal of the unwanted frequencies. The first IF amplifier (Q121) then amplifies the signal of the selected frequency.

3. Demodulator Circuit

After the signal is amplified by the first IF amplifier (Q121), it is input to pin 16 of the demodulator IC (IC103). The second local signal of 21.25MHz (shared with PLL IC reference oscillation), which is oscillated by the TCXO (X102). Then, these two signals are mixed by the internal mixer in IC103 and the result is converted into the second IF signal with a frequency of 450kHz. The second IF signal is output from pin 3 of IC103 to the ceramic filter (FL103), where the unwanted frequency band of that signal is eliminated, and the resulting signal is sent back to the IC103 through pin 5.

The second IF signal input via pin 5 is demodulated by the internal limiter amplifier and quadrature detection circuit in IC103, and output as an audio signal through pin 9.

4. Audio Circuit

The audio signal from pin 9 of IC103 is amplified by the AF amplifier (Q120). The signal is then input to pin 16 of the electronic volume (IC105) for volume adjustment, and output from pin 14. The adjusted signal is sent to the audio power amplifier (IC104) through pin 2 to drive the speaker.

5. Squelch Circuit

The signal except for the noise component in AF signal of IC103 is cut by the active filter inside IC. The noise component is amplified and rectified, then converted to the DC voltage to output from pin 14 of IC103. The voltage is led to pin 2 of CPU and compared with the setting voltage. The squelch will open if the input voltage is lower than the setting voltage.

2) Transmitter System

1. Modulator Circuit

The audio signal is converted to an electric signal in either the internal or external microphone, and input to the microphone amplifier (IC110). IC110 consists of two operational amplifiers; one amplifier (pins 12, 13, and 14) is composed of pre-emphasis and IDC circuits and the other (pins 5, 6, 7, 8, 9, and 10) is composed of a splatter filter. The maximum frequency deviation is obtained by IC105 and input to the cathode of the varicap of the VCO, to change the electric capacity in the oscillation circuit. This produces the frequency modulation.

2. Power Amplifier Circuit

The transmitted signal is oscillated by the VCO, amplified by the pre-drive amplifier (Q101) and drive amplifier (Q106), and input to the final amplifier (Q105). The signal is then amplified by the final amplifier (Q105) and led to the antenna switch (D101) and low-pass filter (L104, L102, L101, C119, C118, C117, C127, C126, C125, C124, C108, and C101), where un-wanted high harmonic waves are reduced as needed, and the resulting signal is supplied to the antenna.

3. APC Circuit

Part of the transmission power from the low-pass filter is detected by D108, converted to DC, and then amplified by a amplifier (IC101). The output voltage controls the bias voltage from the source of Q105 and Q106 to maintain the transmission power constant.

3) PLL Synthesizer System

1. PLL

The dividing ratio is obtained by sending data from the CPU (IC113) to pin 10 and sending clock pulse to pin 9 of the PLL IC (IC101). The oscillated signal from the VCO is amplified by the buffer (Q116) and input to pin 8 of IC102. Each programmable divider in IC102 divides the frequency of the input signal by N according to the frequency data, to generate a comparison frequency of 5 or 6.25kHz.

2. Reference Frequency Circuit

The reference frequency appropriate for the channel steps is obtained by dividing the 21.25MHz reference oscillation (X102) by 4250 or 3400, according to the data from the CPU (IC113). When the resulting frequency is 5kHz, channel steps of 5, 10, 15, 20, and 30kHz are used. When it is 6.25kHz, channel steps of 12.5, 25 , and 50kHz are used.

3. Phase Comparator Circuit

The PLL (IC102) uses the reference frequency, 5 or 6.25kHz. The phase comparator in the IC102 compares the phase of the frequency from the VCO with that of the comparison frequency, 5 or 6.25kHz, which is obtained by the internal divider in IC102.

4. PLL Loop Filter Circuit

If a phase difference is found in the phase comparison between the reference frequency and VCO output frequency, the charge pump output (pin 5) of IC102 generates a pulse signal, which is converted to DC voltage by the PLL loop filter and input to the varicap of the VCO unit for oscillation frequency control.

5. VCO Circuit

A Colpitts oscillation circuit driven by Q108 directly oscillates the desires frequency. The frequency control voltage determined in the CPU (IC113) and PLL circuit is input to the varicaps (D105 and D107). This change the oscillation frequency, which is amplified by the VCO buffer (Q113) and output from the VCO unit.

4) CPU and Peripheral Circuits

1. LCD Display Circuit

The CPU turns ON the LCD via segment and common terminals with 1/4 the duty and 1/3 the bias, at the frame frequency is 112.5Hz.

2. Display Lamp Circuit

When the LAMP key is pressed, "L" is output form pin 67 of CPU (IC113) to the bases of Q140. Q140 then turn ON and the LEDs (D128 and D129) light.

3. Reset and Backup

When the power form the DC jack or external battery increases from Circuits 0V to 2.5 or more, " H " level reset signal is output form the reset IC (IC108) to pin 6 of the CPU (IC113), causing the CPU to reset. The reset signal, however, waits at 100, and does not enter the CPU until the CPU clock (X104) has stabilized.

4. S (Signal) Meter Circuit

The DC potential of pin 12 of IC103 is input to pin 83 of the CPU (IC113), converted from an analog to a digital signal, and displayed as the S-meter signal on the LCD.

5. DTMF Encoder

The CPU (IC113) is equipped with an internal DTMF encoder. The DTMF signal is output from pin 71, through IC112 (Low-pass filter), and then through the microphone amplifier (IC110), and is sent to the varicap of the VCO for modulation. At the same time, the monitoring tone passes through the AF circuit and is output form the speaker.

6. TONE Encoder

The CPU (IC113) is equipped with an internal tone encoder. The tone signal (67.0 to 250.3Hz) is output from pin 70 of the CPU to the 21.25MHz reference oscillation (X102) of the PLL reference oscillator.

7. DCS Encoder

The CPU (IC113) is equipped with an internal DCS code encoder. The code (023 to 754) is output from pin 70 of the CPU to the 21.25MHz reference oscillation (X102) of the PLL reference oscillator.

8. CTCSS, DCS Decoder

The voice band of the AF output signal from pin 9 of IC103 is cut by sharp active filter IC111 and amplified, then led to pin 80 of CPU. The input signal is compared with the programmed tone frequency code in the CPU. The squelch will open when they match.

9. Clock Shift

In the unlikely event that CPU clock noise is present on a particular operating frequency programmed into the radio, you can shift the CPU clock frequency to avoid the CPU clock-noise. The output signal from pin 8 of the CPU turns on Q127. Then the oscillation frequency of X104 will be shifted about 200 ppm.

Parts List
MAIN UNIT

Ref. No.	Parts No.	Parts name	Version	Ref. No.	Parts No.	Parts name	
C101	CU3535	GRM36B102K50PT		C173			
C102	CU3535	GRM36B102K50PT		C174			
C103	CU3519	GRM36CH470J50PT		C175			
C104	CU3535	GRM36B102K50PT		C176	CU3502	GRM36CK010C50PT	
C105				C177	CU3535	GRM36B102K50PT	
C108	CU3535	GRM36B102K50PT		C178	CU3513	GRM36CH150J50PT	
C109	CU3512	GRM36CH120J50PT		C179	CU3535	GRM36B102K50PT	
C110	CU3505	GRM36CH040C50PT		C180	CU3515	GRM36CH220J50PT	
C111	CU3535	GRM36B102K50PT		C181	CU0119	GRM21BB30J106KE18L	
C112	CU3520	GRM1552C1H560JD01D		C182	CU3554	GRM36B104K10PT	
C113	CU3535	GRM36B102K50PT		C183	CU3535	GRM36B102K50PT	
C114	CU3503	GRM36CK020C50PT		C184	CU3547	GRM36B103K16PT	
C115				C185	CU3535	GRM36B102K50PT	
C116	CU3512	GRM36CH120J50PT		C186			
C117	CU3513	GRM36CH150J50PT		C187	CU3513	GRM36CH150J50PT	
C118	CU3513	GRM36CH150J50PT		C188	CU3508	1005 CH 50V 7PF D	
C119	CU3513	GRM36CH150J50PT		C189	CU3535	GRM36B102K50PT	
C120				C190			
C122	CU3559	GRM155B30J105KE18D		C191	CU3137	GRM188B31C105KA92D	
C123				C192	CU3535	GRM36B102K50PT	
C124	CU3512	GRM36CH120J50PT		C193	CU3514	GRM36CH180J50PT	
C125	CU3512	GRM36CH120J50PT		C194	CU3554	GRM36B104K10PT	
C126	CU3513	GRM36CH150J50PT		C195	CU3535	GRM36B102K50PT	
C127	CU3514	GRM36CH180J50PT		C196	CU3502	GRM36CK010C50PT	
C129	CU3512	GRM36CH120J50PT		C197	CU3527	GRM1552C1E221JD01D	
C130	CU3514	GRM36CH180J50PT	T, E, EUK	C198	CU3554	GRM36B104K10PT	
C131	CU3517	GRM36CH330J50PT		C199	CU3515	GRM36CH220J50PT	
C132	CU3516	GRM36CH270J50PT		C200	CU3554	GRM36B104K10PT	
C133	CU3517	GRM36CH330J50PT		C201	CU3535	GRM36B102K50PT	
C134	CU3513	GRM36CH150J50PT		C202	CU3547	GRM36B103K16PT	
C135	CU3513	GRM36CH150J50PT		C203	CU3535	GRM36B102K50PT	
C136	CU3513	GRM36CH150J50PT		C204	CU3535	GRM36B102K50PT	
C137	CU3535	GRM36B102K50PT		C205	CS0396	20V 0.1UF	
C138				C206	CS0396	20V 0.1UF	
C139				C207	CU3547	GRM36B103K16PT	
C140	CU3554	GRM36B104K10PT		C209	CU3515	GRM36CH220J50PT	T, E, EUK
C141	CU3535	GRM36B102K50PT		C209	CU3514	GRM36CH180J50PT	TFH
C142	CU3502	GRM36CK010C50PT		C210	CU3505	GRM36CH040C50PT	
C144				C211	CU3526	GRM1552C1E181JD01D	
C145	CU3535	GRM36B102K50PT		C212	CU3528	GRM1552C1E271JD01D	
C146	CU3535	GRM36B102K50PT		C213	CU3526	GRM1552C1E181JD01D	
C147	CU3506	GRM36CH050C50PT		C214	CU3535	GRM36B102K50PT	
C149	CU3502	GRM36CK010C50PT		C215	CU3554	GRM36B104K10PT	
C150	CU3502	GRM36CK010C50PT		C216			
C151	CU3547	GRM36B103K16PT		C219	CS0398	6.3V 2.2UF	
C152	CU3535	GRM36B102K50PT		C220	CU3535	GRM36B102K50PT	
C153				C221	CU3535	GRM36B102K50PT	
C155	CU3535	GRM36B102K50PT		C222	CU3535	GRM36B102K50PT	
C156				C223			
C157	CU3535	GRM36B102K50PT		C224	CU3547	GRM36B103K16PT	
C158	CU3535	GRM36B102K50PT		C225	CU3535	GRM36B102K50PT	
C159	CU3547	GRM36B103K16PT		C226	CU3535	GRM36B102K50PT	
C160	CU3535	GRM36B102K50PT		C227	CU3535	GRM36B102K50PT	
C161	CU3535	GRM36B102K50PT		C228	CU3515	GRM36CH220J50PT	
C162				C229	CU3515	GRM36CH220J50PT	
C163	CU3535	GRM36B102K50PT		C230	CU3512	GRM36CH120J50PT	
C164	CS0441	TMCMA0J226MTRF		C231	CU0119	GRM21BB30J106KE18L	
C165	CU3535	GRM36B102K50PT		C232	CU3535	GRM36B102K50PT	
C166	CU3513	GRM36CH150J50PT		C233	CU3522	GRM1552C1H820JD01D	
C167	CU3523	GRM1552C1H101JZ01D		C234	CU3547	GRM36B103K16PT	
C168	CU3502	GRM36CK010C50PT		C235	CU3519	GRM36CH470J50PT	
C169	CU3502	GRM36CK010C50PT		C236	CU3535	GRM36B102K50PT	
C171	CU3511	GRM36CH100D50PT		C237	CU3547	GRM36B103K16PT	
C172	CU3535	GRM36B102K50PT		C238	CU3539	GRM36B222K50PT	

Ref. No.	Parts No.	Parts name	Version	Ref. No.	Parts No.	Parts name	
C239	CU3547	GRM36B103K16PT		C305	CU3138	GRM188B31C225KE14D	T, E, EUK
C240	CU3535	GRM36B102K50PT		C306	CU3559	GRM155B30J105KE18D	
C241	CU3539	GRM36B222K50PT		C307	CU3535	GRM36B102K50PT	
C242	CU3535	GRM36B102K50PT		C308	CU3138	GRM188B31C225KE14D	
C243	CU3573	GRM1554C1HR80BZ01D		C310	CU3137	GRM188B31C105KA92D	
C244	CU3573	GRM1554C1HR80BZ01D		C311	CU3535	GRM36B102K50PT	
C245	CU3523	GRM1552C1H101JZ01D		C312	CU3554	GRM36B104K10PT	T, E, EUK
C246	CU3554	GRM36B104K10PT		C313	CU3137	GRM188B31C105KA92D	
C247	CU3554	GRM36B104K10PT		C314	CU3547	GRM36B103K16PT	
C248	CU3559	GRM155B30J105KE18D		C315	CU3547	GRM36B103K16PT	
C249	CU3537	GRM36B152K50PT		C316	CU3554	GRM36B104K10PT	
C250	CU3537	GRM36B152K50PT		C317	CU3517	GRM36CH330J50PT	
C252	CU3535	GRM36B102K50PT		C318	CU3516	GRM36CH270J50PT	
C253	CU3543	GRM36B472K25PT		C319			
C254	CU3549	1005 B 16V 0.015UF K		C320	CU3535	GRM36B102K50PT	
C255	CU3535	GRM36B102K50PT		C321	CU3535	GRM36B102K50PT	
C256	CU3516	GRM36CH270J50PT		C322	CU3559	GRM155B30J105KE18D	
C257	CU3505	GRM36CH040C50PT		C323	CU3535	GRM36B102K50PT	
C258	CU3523	GRM1552C1H101JZ01D		C324	CU3559	GRM155B30J105KE18D	
C259				C325	CU3554	GRM36B104K10PT	
C260	CU3554	GRM36B104K10PT		C326			
C261	CU3547	GRM36B103K16PT		C327	CU3137	GRM188B31C105KA92D	
C262	CU3535	GRM36B102K50PT		C328	CU3535	GRM36B102K50PT	
C263	CU3508	1005 CH 50V 7PF D	T, E, TFH	C329	CU3554	GRM36B104K10PT	
C263	CU3513	GRM36CH150J50PT	EUK	C330	CU3535	GRM36B102K50PT	
C264	CU3535	GRM36B102K50PT		C331	CU0119	GRM21BB30J106KE18L	
C265	CE0436	16CE47BSS		C332	CU3535	GRM36B102K50PT	
C266	CU3137	GRM188B31C105KA92D		C333	CU3535	GRM36B102K50PT	
C267	CU3535	GRM36B102K50PT		C334	CU0119	GRM21BB30J106KE18L	
C268	CU3535	GRM36B102K50PT		C335	CU3540	GRM36B272K50PT	
C269	CU3523	GRM1552C1H101JZ01D		C336	CU3523	GRM1552C1H101JZ01D	
C270	CU3523	GRM1552C1H101JZ01D		C337	CU3535	GRM36B102K50PT	
C271	CU3523	GRM1552C1H101JZ01D		C338	CU3137	GRM188B31C105KA92D	
C272	CU3535	GRM36B102K50PT		C339	CU3137	GRM188B31C105KA92D	
C273	CU3547	GRM36B103K16PT		C340	CU3535	GRM36B102K50PT	
C274	CU3554	GRM36B104K10PT		C341	CU3547	GRM36B103K16PT	
C275	CU3535	GRM36B102K50PT		C342	CU3547	GRM36B103K16PT	
C276	CU3523	GRM1552C1H101JZ01D		C343	CU3554	GRM36B104K10PT	
C277	CU3535	GRM36B102K50PT		C344	CU3554	GRM36B104K10PT	
C278	CU3523	GRM1552C1H101JZ01D		C345	CU3554	GRM36B104K10PT	
C279	CU3547	GRM36B103K16PT		C346	CU3547	GRM36B103K16PT	
C280	CS0441	TMCMA0J226MTRF		C347	CU3523	GRM1552C1H101JZ01D	
C281	CU3535	GRM36B102K50PT		C348	CU3547	GRM36B103K16PT	
C282	CU3554	GRM36B104K10PT		C349	CU3539	GRM36B222K50PT	
C284	CU3559	GRM155B30J105KE18D		C350	CU3533	GRM36B681K50PT	
C285	CU3554	GRM36B104K10PT		C351			
C286	CU3527	GRM1552C1E221JD01D		C352	CU3547	GRM36B103K16PT	
C287	CU3535	GRM36B102K50PT		C353	CU3539	GRM36B222K50PT	
C288	CU3527	GRM1552C1E221JD01D		C354	CU3541	GRM36B332K50PT	
C289	CU3535	GRM36B102K50PT		C355	CU3547	GRM36B103K16PT	
C290	CU3554	GRM36B104K10PT		C356	CU3535	GRM36B102K50PT	
C291	CU3138	GRM188B31C225KE14D		C357	CU3535	GRM36B102K50PT	
C292	CE0436	16CE47BSS		C358	CU0119	GRM21BB30J106KE18L	
C293	CU3554	GRM36B104K10PT		C359	CU3553	GRM36B473K10PT	
C294	CU3535	GRM36B102K50PT		C360	CU3559	GRM155B30J105KE18D	
C295				C361	CU3535	GRM36B102K50PT	
C296	CE0463	10CE100BSS		C362	CU3533	GRM36B681K50PT	
C297				C363	CU3535	GRM36B102K50PT	
C298	CU3535	GRM36B102K50PT		C364	CU3539	GRM36B222K50PT	
C299	CU3137	GRM188B31C105KA92D		C365	CU3533	GRM36B681K50PT	
C300	CU3554	GRM36B104K10PT		C366	CU3537	GRM36B152K50PT	
C301	CU3535	GRM36B102K50PT		C367	CU3523	GRM1552C1H101JZ01D	
C302	CE0462	6CE100BSS		C368	CU3531	GRM36B471K50PT	
C303	CU3535	GRM36B102K50PT		C369	CU3541	GRM36B332K50PT	
C304	CU3554	GRM36B104K10PT		C370	CU3554	GRM36B104K10PT	

Ref. No.	Parts No.	Parts name	Version	Ref. No.	Parts No.	Parts name	
C371	CU3535	GRM36B102K50PT		D130	XD0418	RB521S-30TE61	
C372	CU3559	GRM155B30J105KE18D		FL101	XF0059	Q21707AD27-21.7MHZ	EUK
C373				FL101	XF0051	Q2175AD20 21.7MHZ	T, E, TFH
C375	CU3541	GRM36B332K50PT		FL102	XF0059	Q21707AD27-21.7MHZ	EUK
C376	CU3554	GRM36B104K10PT		FL102	XF0051	Q2175AD20 21.7MHZ	T, E, TFH
C377	CU3554	GRM36B104K10PT		FL103	XC0052	ALFYM450G=K	EUK
C378				FL103	XC0060	ALFYM450F=K	T, E, TFH
C379	CU3535	GRM36B102K50PT		IC101	XA1103	LM2904PWR	
C380	CU3535	GRM36B102K50PT		IC102	XA1107	MB15E07SRPFTGBNDEFE1	
C381	CU3535	GRM36B102K50PT		IC103	XA0404	TA31136FNG(EL)	
C382	CS0439	TMCMA0J476MF		IC104	XA0210	IC NJM2070M	
C383	CU3535	GRM36B102K50PT		IC105	XA1293	M62364FP#DF1G	
C384	CU3535	GRM36B102K50PT		IC106	XA1119	XC6202P502MR	
C385	CU3535	GRM36B102K50PT		IC107	XA0617	TC75S56FU(TE85)	T, E, EUK
C386	CU0119	GRM21BB30J106KE18L		IC108	XA1120	S80845CLNB-B66-T2G	
C387	CU3535	GRM36B102K50PT		IC109	XA1117	S24CS64A01-J8T1G	
C388	CU3535	GRM36B102K50PT		IC110	XA1106	LM2902PWR	
C389	CU3535	GRM36B102K50PT		IC111	XA1106	LM2902PWR	
C390	CU3554	GRM36B104K10PT		IC112	XA1106	LM2902PWR	
C391	CU3535	GRM36B102K50PT		IC113	XA1358	UPD78F0395GC-8EA-A	T, E, EUK
C392	CU3535	GRM36B102K50PT		IC113	XA1292	UPD78F0394GC-8EA-A	TFH
C393	CU0119	GRM21BB30J106KE18L		JK101	UJ0019	HSJ1493-01-010	
C394	CU3512	GRM36CH120J50PT		JK102	UJ0022	HSJ1102-01-540	
C395	CU3535	GRM36B102K50PT		L101	QS401556	0.40-1.55-6TL	
C396	CU3535	GRM36B102K50PT		L102	QS402006	0.40-2.0-6TL	
C397	CU3535	GRM36B102K50PT		L104	QS402006	0.40-2.0-6TL	
C398	CU3138	GRM188B31C225KE14D		L105	QS401405	0.40-1.4-5TL	
C399				L106	QS501403	0.50-1.4-3TL	
C400				L108	QC0812	1005 100NH	
C401	CU3554	GRM36B104K10PT		L109			
C403	CS0441	TMCMA0J226MTRF		L110	QC0757	C1608CB22NJ	
C404	CU3554	GRM36B104K10PT		L111			
C413	CU3559	GRM155B30J105KE18D	T, E, EUK	L112	QS402057	0.40-2.05-7TL	
C414	CU3554	GRM36B104K10PT		L113	QC0875	C2012H68NH	
C415	CU3554	GRM36B104K10PT		L114	QC0902	C2012C1R0J	
CN101				L115	QC0812	1005 100NH	
CN102				L116	QC0736	LK10052R2K-B	
D101	XD0422	HSC277TRF-E		L117	QB0057	MPZ1608S101AT	
D103	XD0419	1SS400TE61		L118	QS402057	0.40-2.05-7TL	
D104				L120	QB0057	MPZ1608S101AT	
D105	XD0421	1SV323(TPH3,H)		L121	QC0818	C2012H82NH	
D106	XD0422	HSC277TRF-E		L123	QC0736	LK10052R2K-B	
D107	XD0421	1SV323(TPH3,H)		L124	QC0773	C1608CBR47J	
D108	XD0453	RB717F		L125	QC0773	C1608CBR47J	
D109				L126	QC0769	1608CBR22J	
D110	XD0451	015AZ3.0-X(TPL3,F)		L127	QC0765	1608 100NH	
D111				L128			
D112	XD0422	HSC277TRF-E		L129	QC0812	1005 100NH	
D113	XD0422	HSC277TRF-E		L130			
D114	XD0421	1SV323(TPH3,H)		L132	QC0842	LB2518T221K	
D115	XD0421	1SV323(TPH3,H)		L133	QC0812	1005 100NH	
D116				L134	QC0902	C2012C1R0J	
D117	XD0421	1SV323(TPH3,H)		L135	QC0875	C2012H68NH	
D118	XD0421	1SV323(TPH3,H)		L136	QC0875	C2012H68NH	
D119	XD0421	1SV323(TPH3,H)		L137	QC0875	C2012H68NH	
D120	XD0421	1SV323(TPH3,H)		L138	QC0875	C2012H68NH	
D121	XL0097	SML-521MUWT86		L139	QC0874	C2012H56NH	
D122	XD0338	1SS362(TE85L)		L140			
D123	XL0036	LED SML-310MT		L141	QC0935	LB2012T150K	
D124	XL0036	LED SML-310MT		L142	QB0057	MPZ1608S101AT	
D125	XL0036	LED SML-310MT		L143			
D126	XL0036	LED SML-310MT		LCD101	EL0059	LCD DJ170	
D127	XD0418	RB521S-30TE61		MIC101	EY0017	OB-27P44	
D128	XL0036	LED SML-310MT		Q101	XT0180	2SC5066FT-Y(TE85L)	
D129	XL0036	LED SML-310MT		Q102	XE0090	SSM3J15FV(TPL3,Z)	

Ref. No.	Parts No.	Parts name	Version	Ref. No.	Parts No.	Parts name	
Q104	XT0210	2SC6026MFV−GR		R136	RK3562	1005 1/16W 100K OHMJ	
Q105	XE0091	RQA0002DNS		R137	RK3551	1005 1/16W 12K OHM J	
Q106	XE0092	RQA0004PXDQS		R138			
Q107				R141			
Q108	XT0219	15GN03F−TL−E		R142	RK3530	1005 1/16W 220 OHM J	
Q110	XU0211	RN2107FV		R143	RK3550	1005 1/16W 10K OHM J	
Q111	XU0210	RN1107FV		R144	RK3526	1005 1/16W 100 OHM J	
Q112	XT0219	15GN03F−TL−E		R145	RK3532	1005 1/16W 330 OHM J	
Q113	XT0219	15GN03F−TL−E		R146	RK3550	1005 1/16W 10K OHM J	
Q114	XT0213	2SC5659T2L		R147	RK3501	1005 1/16W 0 OHM J	
Q115	XT0219	15GN03F−TL−E		R148			
Q116	XT0219	15GN03F−TL−E		R149	RK3552	1005 1/16W 15K OHM J	
Q117	XT0214	HN2C01FE−GR(T5L,F)		R150	RK3554	1005 1/16W 22K OHM J	
Q118	XE0053	3SK293TE85L		R151	RK3537	1005 1/16W 820 OHM J	
Q119	XE0053	3SK293TE85L		R152			
Q120	XT0210	2SC6026MFV−GR		R153	RK3550	1005 1/16W 10K OHM J	
Q121	XT0213	2SC5659T2L		R154	RK3570	1005 1/16W 470K OHMJ	
Q122				R155	RK3552	1005 1/16W 15K OHM J	
Q123	XU0220	RN2111MFV(TPL3)		R156	RK3562	1005 1/16W 100K OHMJ	
Q124	XT0223	2SA2070(TE12L,F)		R157	RK3546	1005 1/16W 4.7K OHMJ	
Q125	XU0211	RN2107FV	T, E, EUK	R158	RK3570	1005 1/16W 470K OHMJ	
Q126				R159	RK3538	1005 1/16W 1.0K OHMJ	
Q127	XU0220	RN2111MFV(TPL3)		R160			
Q128	XT0214	HN2C01FE−GR(T5L,F)		R162	RK3538	1005 1/16W 1.0K OHMJ	
Q129	XU0210	RN1107FV		R163	RK3542	1005 1/16W 2.2K OHMJ	
Q130	XU0212	RN2115FV		R164	RK3550	1005 1/16W 10K OHM J	
Q131	XU0210	RN1107FV		R165	RK3501	1005 1/16W 0 OHM J	
Q132	XT0210	2SC6026MFV−GR		R166	RK3537	1005 1/16W 820 OHM J	
Q133	XU0213	RN1111FV TPL3		R167	RK3539	1005 1/16W 1.2K OHMJ	
Q134	XT0223	2SA2070(TE12L,F)		R168	RK3558	1005 1/16W 47K OHM J	
Q135	XT0212	2SA1955FV−A(TPL3)		R169			
Q136	XT0212	2SA1955FV−A(TPL3)		R170	RK3530	1005 1/16W 220 OHM J	
Q137	XT0212	2SA1955FV−A(TPL3)		R171	RK3564	1005 1/16W 150K OHMJ	
Q138	XU0213	RN1111FV TPL3		R172	RK3570	1005 1/16W 470K OHMJ	
Q139	XT0214	HN2C01FE−GR(T5L,F)		R173	RK3550	1005 1/16W 10K OHM J	
Q140	XU0213	RN1111FV TPL3		R174	RK3526	1005 1/16W 100 OHM J	
Q142	XE0090	SSM3J15FV(TPL3,Z)		R175			
R101	RK3562	1005 1/16W 100K OHMJ		R176	RK3530	1005 1/16W 220 OHM J	
R104	RK3526	1005 1/16W 100 OHM J		R177	RK3530	1005 1/16W 220 OHM J	
R105	RK3566	1005 1/16W 220K OHMJ		R178	RK3570	1005 1/16W 470K OHMJ	
R106	RK3501	1005 1/16W 0 OHM J		R179	RK3550	1005 1/16W 10K OHM J	
R107	RK3534	1005 1/16W 470 OHM J		R180	RK3538	1005 1/16W 1.0K OHMJ	
R108	RK3550	1005 1/16W 10K OHM J		R181	RK3518	1005 1/16W 22 OHM J	
R111	RK3550	1005 1/16W 10K OHM J		R183	RK3538	1005 1/16W 1.0K OHMJ	
R112	RK3530	1005 1/16W 220 OHM J		R184	RK3550	1005 1/16W 10K OHM J	
R113	RK3546	1005 1/16W 4.7K OHMJ		R185	RK3574	1005 1/16W 1.0M OHMJ	
R114	RK3538	1005 1/16W 1.0K OHMJ		R186	RK3538	1005 1/16W 1.0K OHMJ	
R116	RK3526	1005 1/16W 100 OHM J		R187	RK3542	1005 1/16W 2.2K OHMJ	
R117	RK3014	1608 1/10W 10 OHM J		R188	RK3522	1005 1/16W 47 OHM J	
R118	RK3518	1005 1/16W 22 OHM J		R189	RK3550	1005 1/16W 10K OHM J	
R119	RK3562	1005 1/16W 100K OHMJ		R190	RK3556	1005 1/16W 33K OHM J	
R120	RK3530	1005 1/16W 220 OHM J		R191	RK3562	1005 1/16W 100K OHMJ	
R121				R192	RK3574	1005 1/16W 1.0M OHMJ	
R122	RK3542	1005 1/16W 2.2K OHMJ		R193	RK3562	1005 1/16W 100K OHMJ	
R123				R194	RK3562	1005 1/16W 100K OHMJ	
R124	RK3552	1005 1/16W 15K OHM J		R195	RK3560	1005 1/16W 68K OHM J	
R126				R196	RK3566	1005 1/16W 220K OHMJ	
R127	RK3557	1005 1/16W 39K OHM J		R198	RK3550	1005 1/16W 10K OHM J	
R128	RK3562	1005 1/16W 100K OHMJ		R199	RK3570	1005 1/16W 470K OHMJ	
R130	RK3562	1005 1/16W 100K OHMJ		R200	RK3550	1005 1/16W 10K OHM J	
R131	RK3558	1005 1/16W 47K OHM J		R201	RK3550	1005 1/16W 10K OHM J	
R132	RK3557	1005 1/16W 39K OHM J		R202	RK3558	1005 1/16W 47K OHM J	
R133	RK3518	1005 1/16W 22 OHM J		R203	RK3562	1005 1/16W 100K OHMJ	
R134	RK3501	1005 1/16W 0 OHM J		R204	RK3570	1005 1/16W 470K OHMJ	
R135	RK3551	1005 1/16W 12K OHM J		R205	RK3542	1005 1/16W 2.2K OHMJ	

Ref. No.	Parts No.	Parts name	Version	Ref. No.	Parts No.	Parts name	
R206	RK3536	1005 1/16W 680 OHM J	EUK	R276	RK3552	1005 1/16W 15K OHM J	
R206	RK3539	1005 1/16W 1.2K OHMJ	T, E, TFH	R277	RK3552	1005 1/16W 15K OHM J	
R207	RK3536	1005 1/16W 680 OHM J	EUK	R278	RK3550	1005 1/16W 10K OHM J	
R207	RK3539	1005 1/16W 1.2K OHMJ	T, E, TFH	R279	RK3514	1005 1/16W 10 OHM J	
R208	RK3550	1005 1/16W 10K OHM J		R280	RK3562	1005 1/16W 100K OHMJ	
R209	RK3556	1005 1/16W 33K OHM J		R281	RK3562	1005 1/16W 100K OHMJ	
R210	RK3538	1005 1/16W 1.0K OHMJ		R282	RK3538	1005 1/16W 1.0K OHMJ	
R211	RK3550	1005 1/16W 10K OHM J		R283	RK3550	1005 1/16W 10K OHM J	
R212	RK3518	1005 1/16W 22 OHM J		R284	RK3550	1005 1/16W 10K OHM J	
R213	RK3550	1005 1/16W 10K OHM J		R285	RK3562	1005 1/16W 100K OHMJ	
R214	RK3518	1005 1/16W 22 OHM J		R286	RK3562	1005 1/16W 100K OHMJ	
R215	RK3574	1005 1/16W 1.0M OHMJ		R287	RK3550	1005 1/16W 10K OHM J	
R216	RK3574	1005 1/16W 1.0M OHMJ		R288	RK3560	1005 1/16W 68K OHM J	
R217	RK3574	1005 1/16W 1.0M OHMJ		R289	RK3558	1005 1/16W 47K OHM J	
R218				R290	RK3566	1005 1/16W 220K OHMJ	
R219	RK3550	1005 1/16W 10K OHM J		R291	RK3558	1005 1/16W 47K OHM J	
R220	RK3574	1005 1/16W 1.0M OHMJ		R292	RK3562	1005 1/16W 100K OHMJ	
R221	RK3574	1005 1/16W 1.0M OHMJ		R293	RK3562	1005 1/16W 100K OHMJ	
R222	RK3564	1005 1/16W 150K OHMJ		R294	RK3562	1005 1/16W 100K OHMJ	
R223				R295	RK3562	1005 1/16W 100K OHMJ	
R225	RK3550	1005 1/16W 10K OHM J	T, E, TFH	R297	RK3550	1005 1/16W 10K OHM J	
R225	RK3547	1005 1/16W 5.6K OHMJ	EUK	R298	RK3554	1005 1/16W 22K OHM J	
R226	RK3550	1005 1/16W 10K OHM J		R299	RK3554	1005 1/16W 22K OHM J	
R227	RK3564	1005 1/16W 150K OHMJ		R300	RK3556	1005 1/16W 33K OHM J	
R228	RK3554	1005 1/16W 22K OHM J		R301	RK3550	1005 1/16W 10K OHM J	
R229	RK3544	1005 1/16W 3.3K OHMJ		R302	RK3554	1005 1/16W 22K OHM J	
R230	RK3501	1005 1/16W 0 OHM J		R303	RK3559	1005 1/16W 56K OHM J	
R231	RK3514	1005 1/16W 10 OHM J		R304	RK3550	1005 1/16W 10K OHM J	
R233	RK3536	1005 1/16W 680 OHM J		R305	RK3568	1005 1/16W 330K OHMJ	
R234	RK3532	1005 1/16W 330 OHM J		R306	RK3536	1005 1/16W 680 OHM J	
R235	RK3562	1005 1/16W 100K OHMJ		R307	RK3562	1005 1/16W 100K OHMJ	
R237	RK3570	1005 1/16W 470K OHMJ		R308	RK3550	1005 1/16W 10K OHM J	
R239	RK3574	1005 1/16W 1.0M OHMJ		R309	RK3550	1005 1/16W 10K OHM J	
R240	RK3562	1005 1/16W 100K OHMJ	T, E, EUK	R310	RK3546	1005 1/16W 4.7K OHMJ	
R241	RK3550	1005 1/16W 10K OHM J	T, E, EUK	R311	RK3550	1005 1/16W 10K OHM J	
R242	RK3566	1005 1/16W 220K OHMJ		R312	RK3550	1005 1/16W 10K OHM J	
R243	RK3566	1005 1/16W 220K OHMJ		R313	RK3559	1005 1/16W 56K OHM J	
R244	RK3550	1005 1/16W 10K OHM J	T, E, EUK	R314	RK3559	1005 1/16W 56K OHM J	
R245	RK3553	1005 1/16W 18K OHM J		R316	RK3550	1005 1/16W 10K OHM J	
R246	RK3550	1005 1/16W 10K OHM J		R317	RK3570	1005 1/16W 470K OHMJ	
R247	RK3574	1005 1/16W 1.0M OHMJ		R318	RK3546	1005 1/16W 4.7K OHMJ	
R248	RK3550	1005 1/16W 10K OHM J		R319	RK3559	1005 1/16W 56K OHM J	
R249	RK3550	1005 1/16W 10K OHM J		R320	RK3562	1005 1/16W 100K OHMJ	
R250	RK3550	1005 1/16W 10K OHM J		R321			
R251	RK3546	1005 1/16W 4.7K OHMJ		R324	RK3558	1005 1/16W 47K OHM J	
R252	RK3526	1005 1/16W 100 OHM J	T, E, EUK	R325	RK3558	1005 1/16W 47K OHM J	
R253	RK3550	1005 1/16W 10K OHM J	T, E, EUK	R326	RK3562	1005 1/16W 100K OHMJ	
R254	RK3553	1005 1/16W 18K OHM J		R327	RK3566	1005 1/16W 220K OHMJ	
R255	RK3566	1005 1/16W 220K OHMJ		R328	RK3559	1005 1/16W 56K OHM J	
R256	RK3562	1005 1/16W 100K OHMJ		R329	RK3556	1005 1/16W 33K OHM J	TFH
R257	RK1018	3216 1/8 W 100 OHM J		R329	RK3557	1005 1/16W 39K OHM J	T, E, EUK
R258	RK3566	1005 1/16W 220K OHMJ		R330	RK3550	1005 1/16W 10K OHM J	TFH
R259	RK3501	1005 1/16W 0 OHM J	T, E, EUK	R330	RK3551	1005 1/16W 12K OHM J	T, E, EUK
R260	RK3562	1005 1/16W 100K OHMJ	T, E, EUK	R331	RK3550	1005 1/16W 10K OHM J	
R261				R333	RK3546	1005 1/16W 4.7K OHMJ	
R262	RK3542	1005 1/16W 2.2K OHMJ		R334	RK3546	1005 1/16W 4.7K OHMJ	
R263	RK3554	1005 1/16W 22K OHM J		R335	RK3546	1005 1/16W 4.7K OHMJ	
R265	RK3550	1005 1/16W 10K OHM J		R336	RK3546	1005 1/16W 4.7K OHMJ	
R266	RK3574	1005 1/16W 1.0M OHMJ		R337	RK3558	1005 1/16W 47K OHM J	
R267	RK3538	1005 1/16W 1.0K OHMJ		R338	RK3558	1005 1/16W 47K OHM J	
R268	RK3562	1005 1/16W 100K OHMJ		R339			
R269	RK3558	1005 1/16W 47K OHM J		R340	RK3552	1005 1/16W 15K OHM J	
R270	RK3550	1005 1/16W 10K OHM J		R341	RK3562	1005 1/16W 100K OHMJ	
R271	RK3538	1005 1/16W 1.0K OHMJ		R342	RK3537	1005 1/16W 820 OHM J	
R273	RK3560	1005 1/16W 68K OHM J		R343	RK3550	1005 1/16W 10K OHM J	

Ref. No.	Parts No.	Parts name	Version
R344	RK3537	1005 1/16W 820 OHM J	
R345	RK3546	1005 1/16W 4.7K OHMJ	
R346	RK3562	1005 1/16W 100K OHMJ	
R347	RK3562	1005 1/16W 100K OHMJ	
R348	RK3562	1005 1/16W 100K OHMJ	
R349	RK3550	1005 1/16W 10K OHM J	
R350	RK3550	1005 1/16W 10K OHM J	
R351	RK3542	1005 1/16W 2.2K OHMJ	
R352	RK3550	1005 1/16W 10K OHM J	
R353	RK3538	1005 1/16W 1.0K OHMJ	
R354	RK3550	1005 1/16W 10K OHM J	
R355	RK3538	1005 1/16W 1.0K OHMJ	
R356	RK3536	1005 1/16W 680 OHM J	
R357	RK3550	1005 1/16W 10K OHM J	
R358	RK3538	1005 1/16W 1.0K OHMJ	
R359	RK3566	1005 1/16W 220K OHMJ	
R360	RK3562	1005 1/16W 100K OHMJ	
R361	RK3554	1005 1/16W 22K OHM J	
R362			
R363			
R363	RK3538	1005 1/16W 1.0K OHMJ	TFH
R363	RK3564	1005 1/16W 150K OHMJ	E, EUK
R365	RK3534	1005 1/16W 470 OHM J	
R366	RK3501	1005 1/16W 0 OHM J	
R367	RK3501	1005 1/16W 0 OHM J	
R368	RK3546	1005 1/16W 4.7K OHMJ	
R369	RK3538	1005 1/16W 1.0K OHMJ	
R370	RK3550	1005 1/16W 10K OHM J	
R371	RK3562	1005 1/16W 100K OHMJ	
R372	RK3560	1005 1/16W 68K OHM J	T, E, EUK
R372	RK3554	1005 1/16W 22K OHM J	TFH
R373	RK3574	1005 1/16W 1.0M OHMJ	
R374	RK3558	1005 1/16W 47K OHM J	
R375	RK3562	1005 1/16W 100K OHMJ	
R376			
R377	RK3558	1005 1/16W 47K OHM J	
R378	RK3558	1005 1/16W 47K OHM J	
SW101	UU0043	EVQPJ705K	
TH101			
W101	MRCL07AA	#30R02-070-02	
W102	MACL07AA	#30A02-070-02	
W103	MACLH2GG	#30AH1-025-H1	T, E
X102	XQ0208	DSX321SC21.250MHZ	
X103	XK0005	CDBCB450KCAY24-R0	
X104	XQ0212	SMD-49 8.192MHZ	
	UP0619A	DJ175 INTEGRATED-A	
	AF0003	0PH M2+3 FE/N3	
	AF0030	0PH2+6FE/N1	
	AN0034	M6 NUT BR/B.N	
	AN0042	DIAL NUT	
	AX0009	OPH P2+6 FE/N 1	
	DG0046	LCD LIGHT DJ170	
	DP0195	LCD PANEL	
	ES0027	36-8BB-10B2 ROHS	
	FG0234Y	MIC HOLDER DJ190	
	FG0392	WATERPROOF CAP	
	FG0418	LCD RUB CONE	
	FG0478	KEYBOAD	
	FG0479	PTT RUBBER	
	FG0480	JACK CAP	
	FM0265A	HEAT SINK, DJV17	
	FM0300	ANT GND DJ175	
	FP0310	TERMINAL CASE	
	FP0321	SPACER	
	FP0324	BLIND SHEET DJ175	

Ref. No.	Parts No.	Parts name	
	KZ0219	FRONT CASE ASSYDJ175	
	NK0081	KNOB	
	SD0111A	BATTERY TERMINAL	
	SD0137	TERMINAL	
	SP0013	KNOB SPRING 7800	
	SS0112	CHASSIS	
	ST0089	LCD HOLDER	
	TL0033	REFLECTIVE SHEET	
	TS0188	VCO CASE DJ175	
	UE0571	SMA ANT CONNECTOR	
	UR0027	ROTARY ENCODER	
	YX0045	LCD TAPE	

CHARGER UNIT (EDC-165)

Ref. No.	Parts No.	Parts name	
D101	XL0125	MVR3338S	
JK101	UJ0033	HEC2781-010520	
R101	RF0027	SPR3 56 OHM	
R102	RK3038	1608 1/10W 1.0KOHM J	
R103			
	UP0613	EDC165 INTEGRATED	
	AP0017	PH P2.6+10 FE/B.ZN	
	DD0017	BLIND SHEET	
	KS0103	BOTTOM CASE EDC165	
	KU0162	UPPER CASE EDC164	
	SP0020	CHARGE TERMINAL	
	TT1002	1.0X1MM	

ACCESSORIES

	Parts No.	Parts name	
	BB0009Y	HAND STRAP DJS41	
	BH0011	BELT CLIP	
	DS0446	NITTO MODEL PLATE(S)	
	EA0141	ANTENNA EA0141	T, E, EUK
	EA0142	ANTENNA EA0142	TFH
	EDC146	AC ADAPTOR 120V	T
	EDC147	AC ADAPTOR 230V	T, E, EUK
	EDC148	AC ADAPTOR 230V UK PLUG	EUK
	EBP072	NI-MH BATTERY PACK	

EXPLODED VIEW

NK0081 FG0480 FG0479 ES0027

FG0392

KZ0219

YX0045

DP0195

FG0478

AX0009

ST0089

FP0324

EL0059

DG0046

FG0418

TL0033

FG0234Y

AF0030

AF0003

AF0003

AF0003

FM0300

UE0571

UR0027

AN0042

AN0034

SS0112

AF0003

FP0310

SD0137

FP0321

SD0111A

AF0003
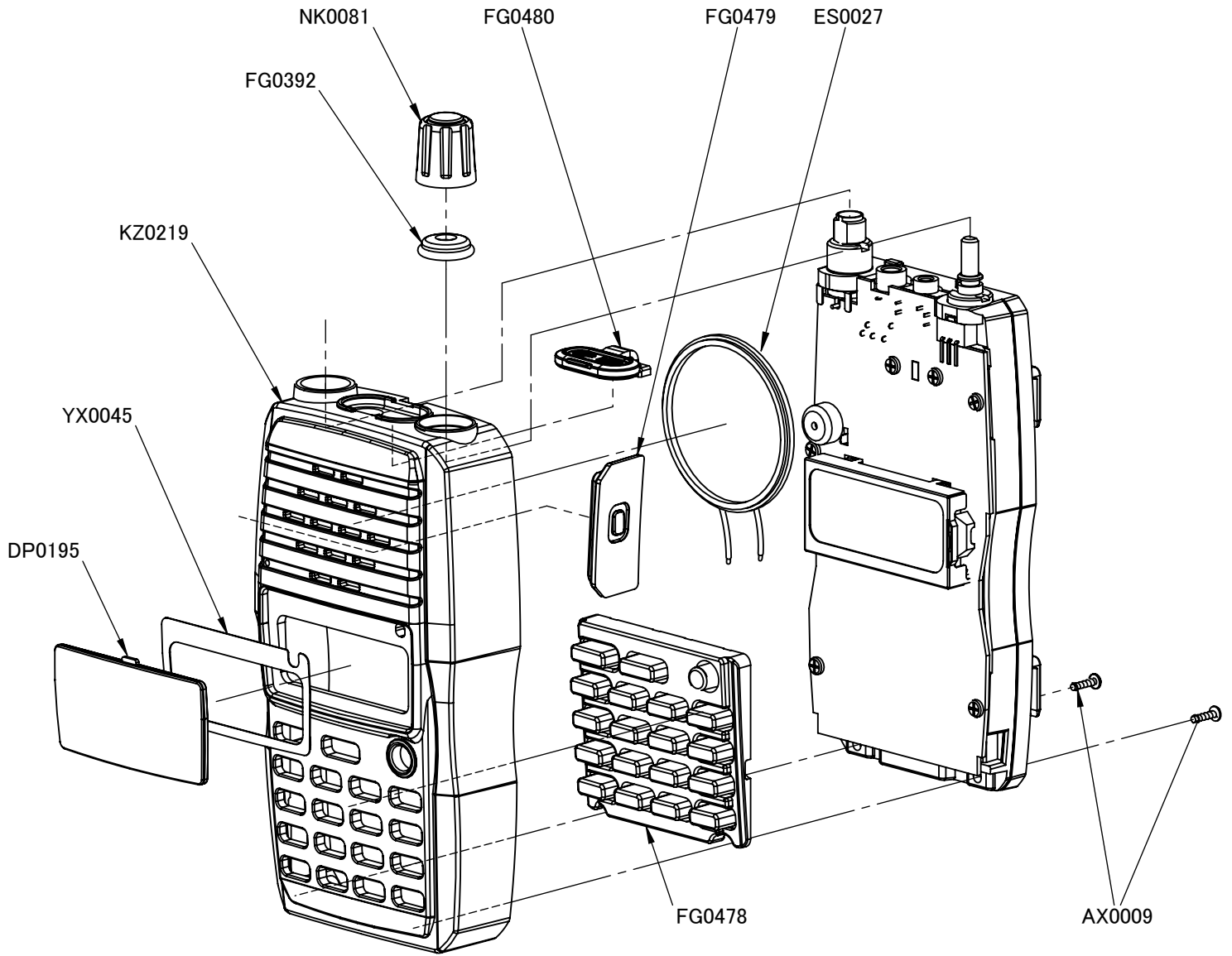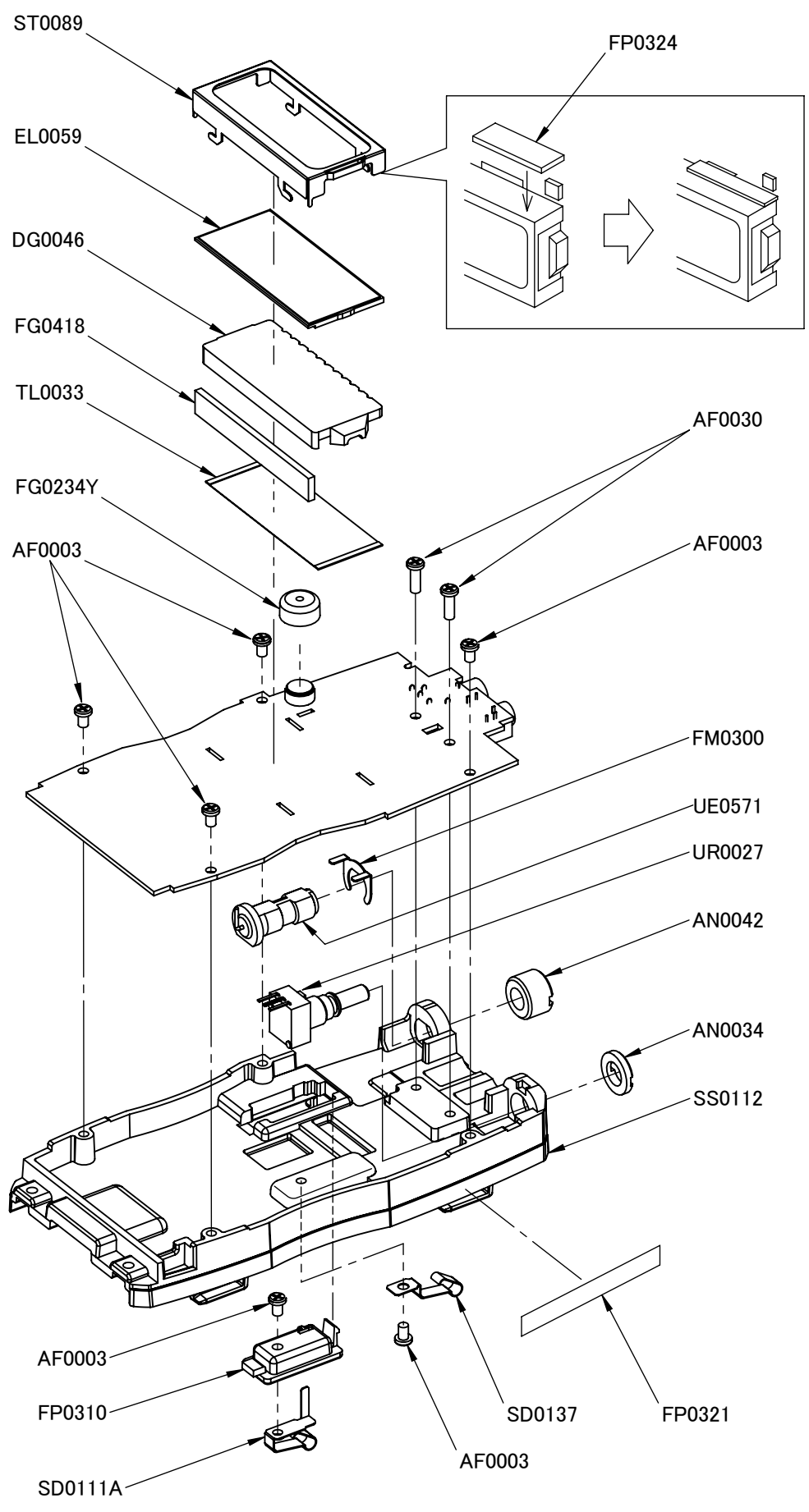
PC Board View
MAIN − Side A
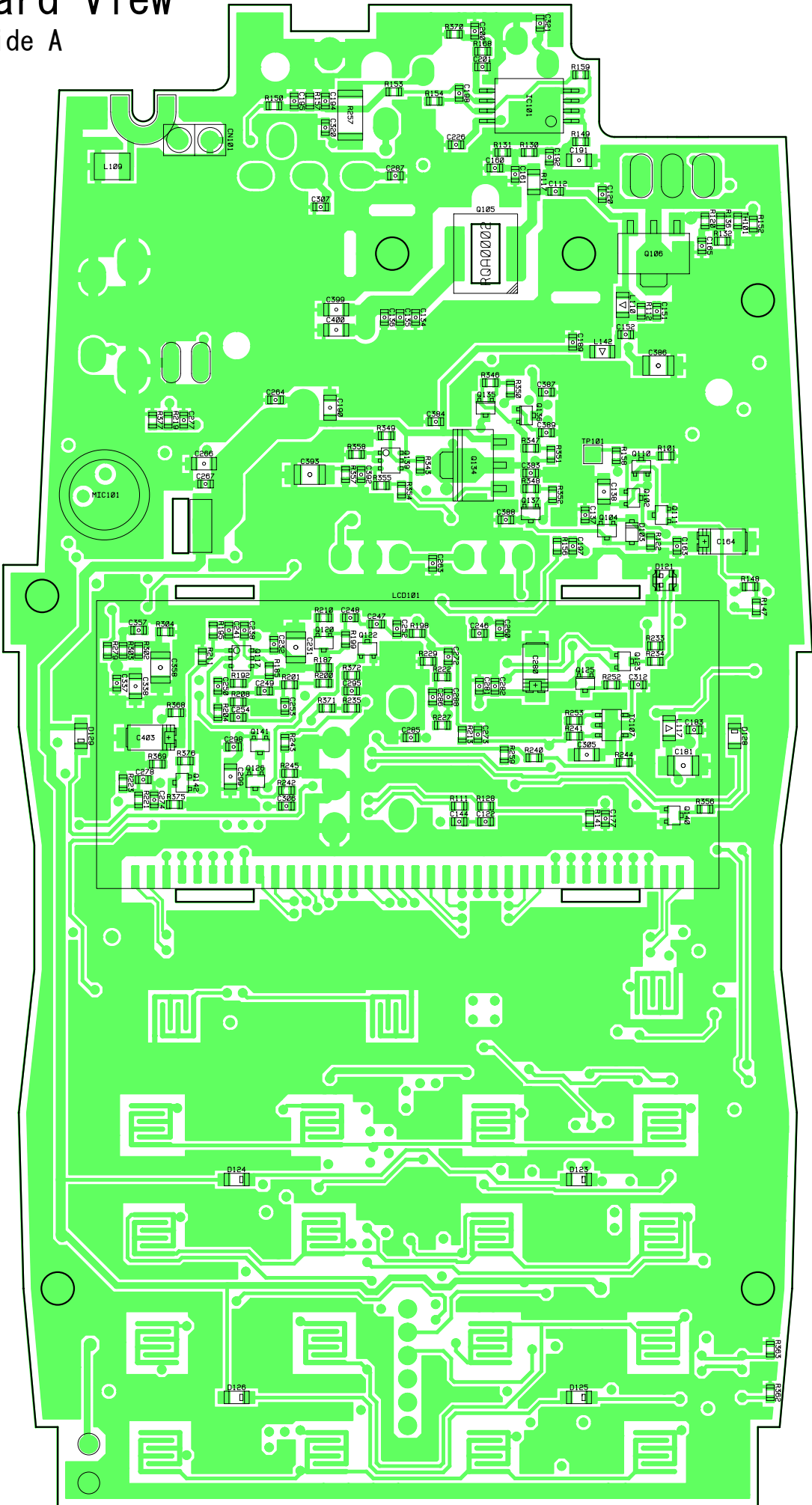
PC Board View
MAIN – Side B
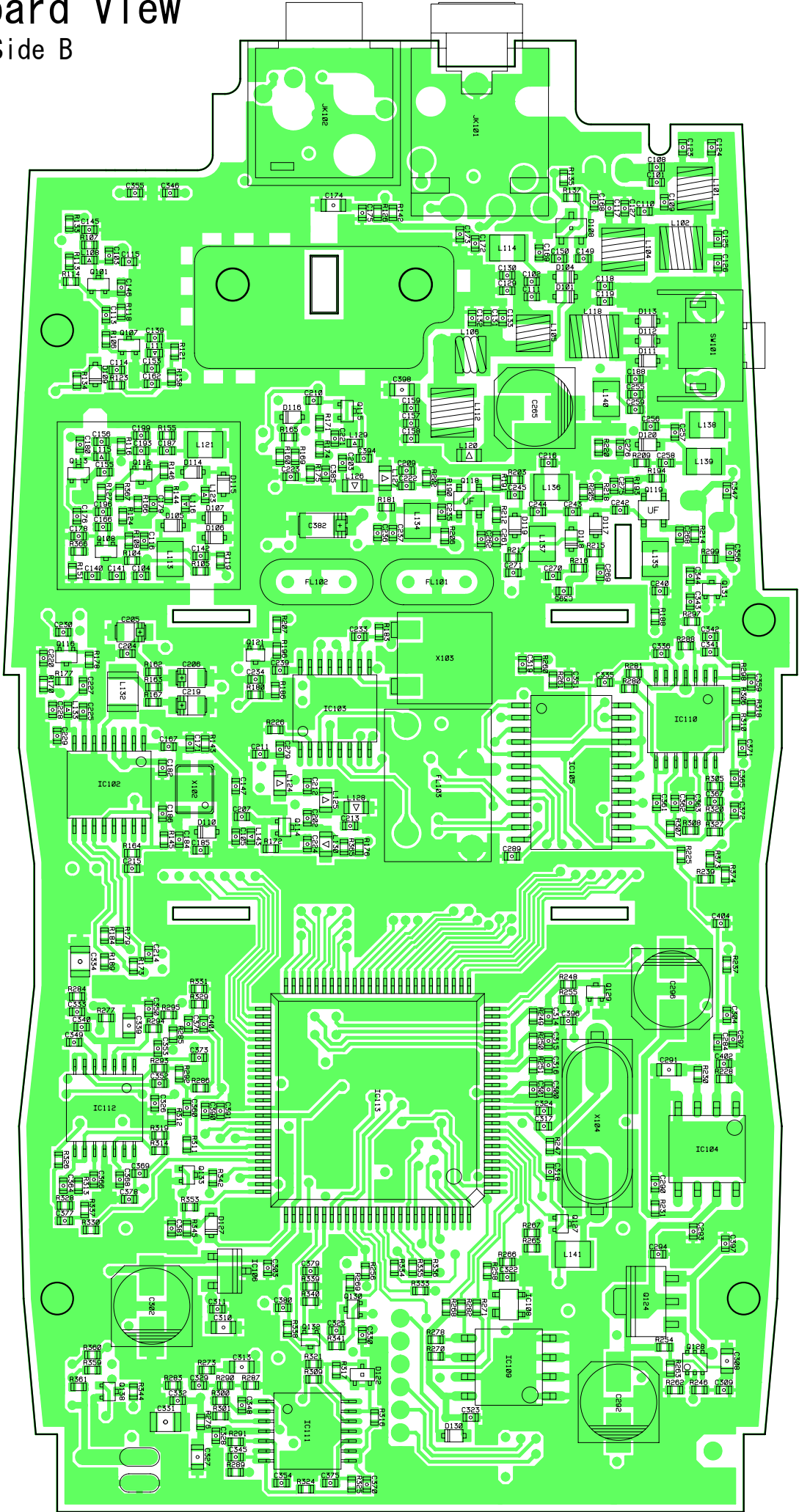
PC Board View EDC165

Side-A

T103   T101   T102
        (+)   (−)

R102
R103

Side-B

JK101

R101

D101

(Anode)
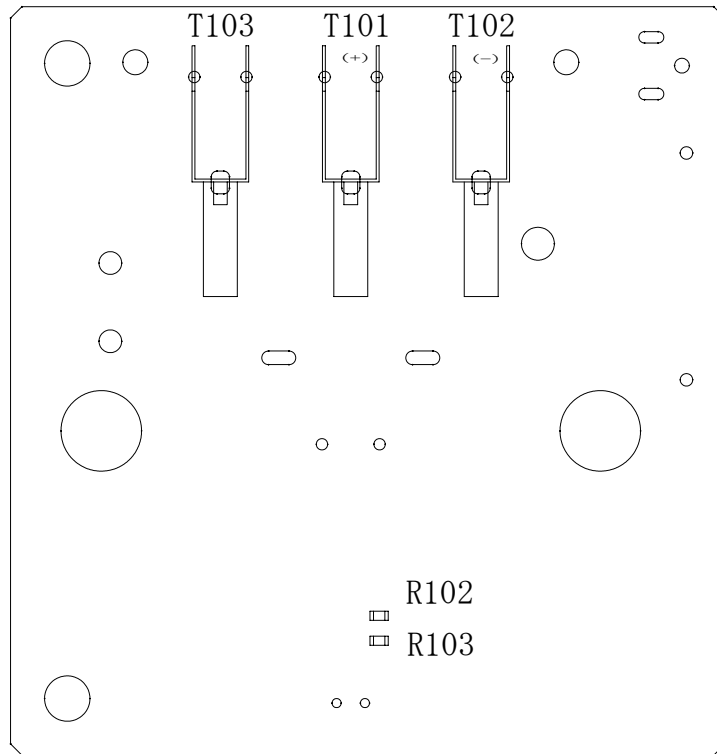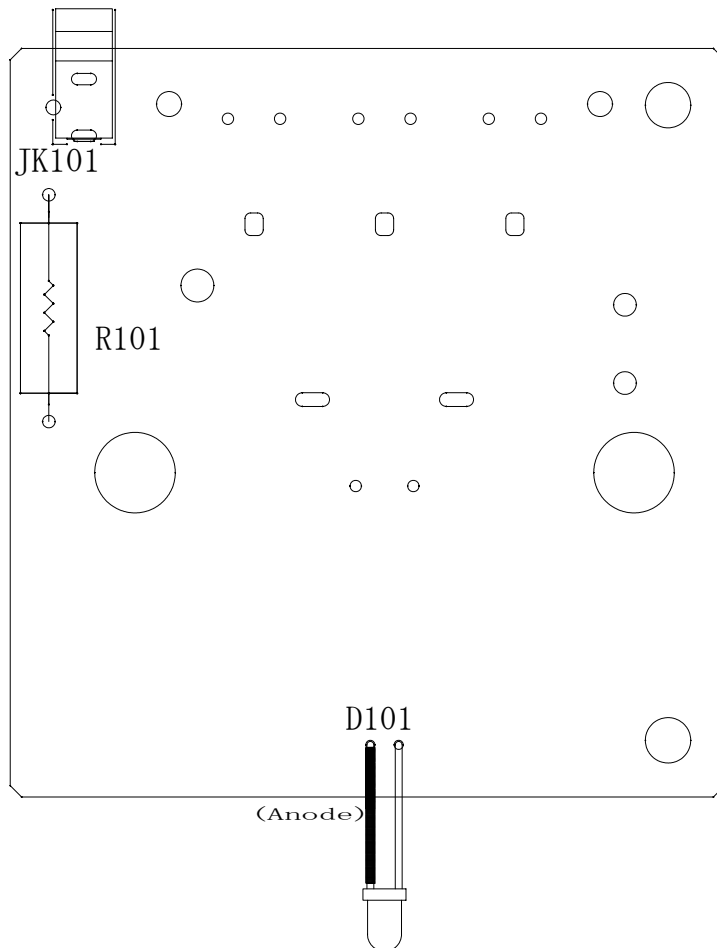
Adjustments:

1) Required Test Equipment

The following items are required to adjust radio parameters

1.Regulated power supply

	Supply voltage:	7－8 DC
	Current:	3A or more

2.Digital multimeter

	Voltage range:	FS＝Approx. 20V
	Current:	10A or more
	Input resistance:	High impedance

3.Oscilloscope

	Measurable frequency:	Audio frequency

4.Audio dummy load

	Impedance:	8Ω
	Dissipation:	1W or more
	Jack:	3.5mmΦ

5.SSG

	Output frequency:	200MHz or more
	Impedance:	50Ω, unbalanced
	Modulation:	FM

6.Power meter

	Measurable frequency:	Up to 200MHz
	Impedance:	50Ω, unbalanced
	Measuring range:	0.1W-10W

7.Audio volmeter

	Measurable frequency:	Up to 100kHz
	Sensitivity:	1mV to 10V

8.Audio generator

	Output frequency:	67Hz to 10kHz
	Output impedance:	600Ω, unbalanced

9.Distortion meter/SINAD meter

	Measurable frequency:	1kHz
	Input level:	Up to 40dB
	Distortion:	1%-100%

10.Frequency counter

	Measurable frequency:	Up to 200MHz
	Measurable stability:	Approx. ±0.1ppm

11.Linear detector

Measurable frequency:		Up to 200MHz
Characteristics:		Flat
CN:		60dB or more

12. DC Ammeter

Current:		3A or more

Note:

(1). SSG initial setting

Modulation Frequency:1kHz

Modulation Level:3.0kHz (T, E, TFH)/ 1.5kHz (EUK)

(2). Reference sensitivity: 12dB SINAD

(3). Specified audio output level: 500mW at 8Ω

(4). Standard audio output level: 50mW at 8Ω

(5). Use an RF cable (3D2W:1M) for test equipment.

(6). Attach a fuse to the RF test equipment.

(7). All SSG outputs are indicated by EMF

(8). Supply voltage for the transceiver: 7.2VDC

2) Adjustment mode

The adjustment should be operated in the Adjustment mode. Therefore except for the reference frequency, deviation and tone-deviation adjustments an operator won't touch the components on the board, but most of the adjustments should be done by operating the dial and keys on the unit. During such operation, memory channels are used temporary therefore it is required to program memories before the unit is set to the adjustment mod. Please refer the chart below for the programming channels. The frequencies may be varied within the range of ±0.2Mhz depending on the RF environment around your work area, and refer the instruction manual for how to program the memories into the memory-channels.

To enter the adjustment mode, press "F" then "KL" to key-lock the unit. Then press the numeric keys in order of "4", "9", "0", "2", "1" and "7". Observe that decimal points appear on the display below 100MHz and 10MHz digits. To exit from the adjustment mode, repeat the whole sequence (key-lock then enter the code in order). NEVER RESET THE UNIT WHILE OPERATING IN THE SET MODE. This may reset whole adjustment values resulting the malfunction of the unit in the operating mode. The chart below shows the adjustment points and interface between the unit and instruments. Please use an attenuator in case the specifications of the linear-detector and frequency counter may exceed the requirement herein.

* Simply memory the frequencies only into the relative memory channels.

Channel	Adjustment menu	Frequency	
		T, E, EUK	TFH
1	Frequnecy Adjustment	145.000	162.000
2	TX-output / High power	145.000	162.000
3	TX-output / Mid power	145.000	162.000
4	TX-output / Low power	145.000	162.000
5	Microphone deviation	145.000	162.000
6	CTCSS tone deviation	145.000	162.000
7	DCS deviation	145.000	162.000
11	Sensitivity adjustment (lower edge)	137.000	137.000
12	Sensitivity adjustment (center range)	150.000	150.000
13	Sensitivity adjustment (upper range)	173.000	173.000
14	Squelch adjustment (minimum)	145.000	162.000
15	Squelch adjustment (maximum)	145.000	162.000
16	S-meter adjustment (1)	145.000	162.000
17	S-meter adjustment (Full)	145.000	162.000

1. Frequency adjustment

Select memory ch.1.

Press PTT on the unit to transmit and measure the TX frequency. One of digits 00-FF should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the frequency to bring the value to the range specified below.

Specification value :±50Hz

Necessary instrument: (1). Frequency counter

2. TX output – High power

Select memory ch.2.

Press PTT on the unit to transmit. One of digits 00-FF should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the TX power to meet the specification. Release the PTT to finish the adjustment. Be sure to check the consuming current value after the adjustment is completed.

Specification:

TX-output power/High: 5.0 watts

Current consumption / 1.6A or less

Necessary instrument: (1). DC Ammeter

(2). Power meter

3. TX output – Middle power

Select memory ch.3.

Press PTT on the unit to transmit. One of digits 00-FF should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the TX power to meet the specification. Release the PTT to finish the adjustment.

Specification: 2.0 watts

Necessary instrument: (1). Power meter

4. TX output – Low power

Select memory ch.4.

Press PTT on the unit to transmit. One of digits 0-F should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the TX power to meet the specification. Release the PTT to finish the adjustment.

Specification: 0.5 watts

Necessary instrument: (1). Power meter

5. Microphone deviation

Select memory ch.5.

Input the signal as specified below from an Audio generator and transmit. Measure the deviation value using a Liner-detector. Press PTT on the unit to transmit. One of digits 00-FF should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the deviation to meet the specification. Release the PTT to finish the adjustment.

Specification : 4.3±0.1kHz (T, E, TFH)

2.2±0.1kHz (EUK)

Measuring condition:(1). Audio generator setting

Frequency: 1kHz

Output Level:50mV

Necessary instrument:(1). Audio generator

(2). Linear detector

6. CTCSS tone 88.5Hz deviation and adjustment of the sign-wave

Select memory ch.6.

Press PTT to automatically transmit 88.5Hz tone. Measure the deviation value using a Liner-detector. Press PTT on the unit to transmit. One of digits 00-FF should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the tone deviation to meet the specification below. Use an oscilloscope to monitor the sign-wave then correct the wave shape (see the chart 1 below).

Specification: 0.80±0.05KHz (T, E)

0.90±0.05KHz (TFH)

0.50±0.05KHz (EUK)

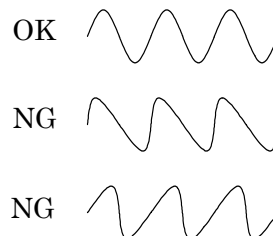Necessary instrument:(1). Linear detector

(2). Oscilloscope

OK

NG

NG

Chart 1: sign-wave correction

7. DCS 255 deviation

Select memory ch.7.

Press PTT to automatically transmit DCS code of 255. Measure the deviation value using a Liner-detector. Press PTT on the unit to transmit. One of digits 00-FF should appear on the display where memory channel number was shown. Rotate the dial on the unit to adjust the tone deviation to meet the specification below.

Specification: 0.80±0.05KHz (T, E, TFH)

0.50±0.05KHz (EUK)

Necessary instrument:(1). Linear detector

8. Receiver sensitivity adjustment

  Preparation: Set the speaker audio output level to 50mW.

  Operation: There are three points to be adjusted, the lower, central, and upper edges of
               the receiver's covering range. Set the memory channels accordingly. Input an
               RF signal from the SSG to the antenna connector then measure output signal
               at the speaker jack using a SINAD meter. Press "F"(FUNC) key on the unit.
               One of digits 00-FF should appear on the display where memory channel
               number was shown. Rotate the dial on the unit to bring the SINAD value to
               12dB or better.

        a. Lower edge

              Condition:(1). Memory Channel: 11
                        (2). SSG setting
                             Frequency: 137.000MHz
                             RF Output Level: -7.0dBμ
                             Modulation Frequency:1kHz
                             Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

        b. Center range

              Condition:(1). Memory Channel: 12
                        (2). SSG setting
                             Frequency: 150.000MHz
                             RF Output Level: -8.0dBμ
                             Modulation Frequency:1kHz
                             Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

        a. Upper edge

              Condition:(1). Memory Channel: 13
                        (2). SSG setting
                             Frequency: 173.000MHz
                             RF Output Level: -8.0dBμ
                             Modulation Frequency:1kHz
                             Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

              Necessary instruments:(1). Audio volmeter
                                    (2). SSG
                                    (3). SINAD Meter
                                    (4). Audio dummy load

    Note:

    Press "FUNC" key or leave the unit for 5 seconds to enter the new values and go to the
    next adjustment procedure. Memory number should appear on the display when the unit
    exits the sensitivity adjustment.

9. Squelch adjustments:

   Select the memory channel number accordingly to adjust the level Min and Max.

   Input an RF signal to the antenna connector from SSG then press FUNC key on the unit.

   A beep ("pip") sounds and completes the adjustment.

   a. Squelch level (Min.)

   Condition:(1). Memory Channel:14

   (2). SSG setting

   Frequency: 145.000MHz (T, E, EUK)/ 162.000MHz (TFH)

   RF Output Level: -11dBμ

   Modulation Frequency:1kHz

   Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

   b. Squelch level (Max.)

   Condition:(1). Memory Channel: 15

   (2). SSG setting

   Frequency: 145.000MHz (T, E, EUK)/ 162.000MHz (TFH)

   RF Output Level:0dBμ

   Modulation Frequency:1kHz

   Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

   Necessary instrument:(1). SSG

10. S-meter adjustments

   Select the memory channel number accordingly to adjust the S-meter level 1 and full.

   Input an RF signal to the antenna connector from SSG then press FUNC key on the unit.

   A beep ("pip") sounds and completes the adjustment.

   a. S-meter level 1

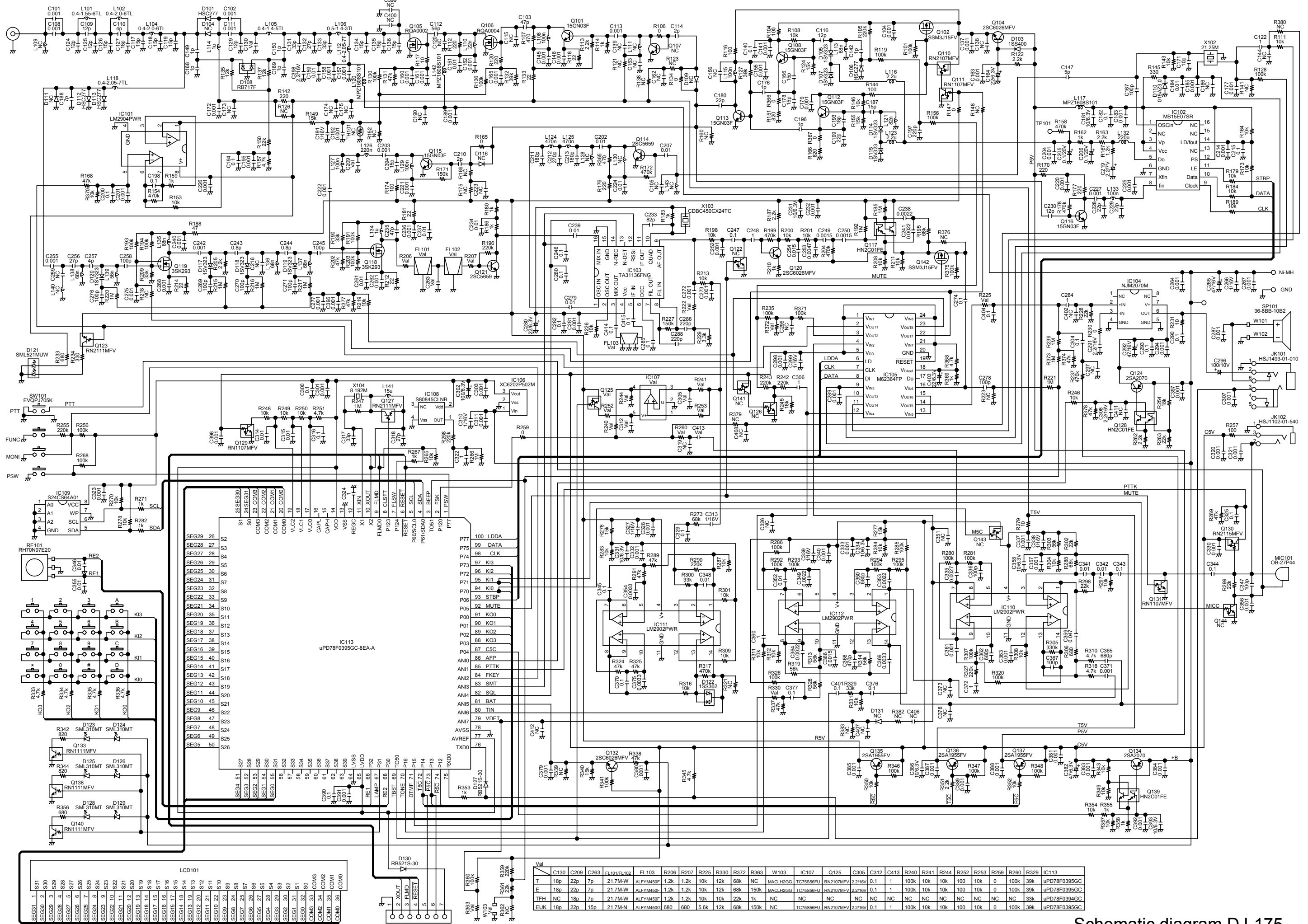   Condition:(1). Memory Channel: 16

   (2). SSG setting

   Frequency: 145.000MHz (T, E, EUK)/ 162.000MHz (TFH)

   RF Output Level:-5dBμ

   Modulation Frequency:1kHz

   Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

   b. S-meter level Full

   Condition:(1). Memory Channel: 17

   (2). SSG setting

   Frequency: 145.000MHz (T, E, EUK)/ 162.000MHz (TFH)

   RF Output Level:15dBμ

   Modulation Frequency:1kHz
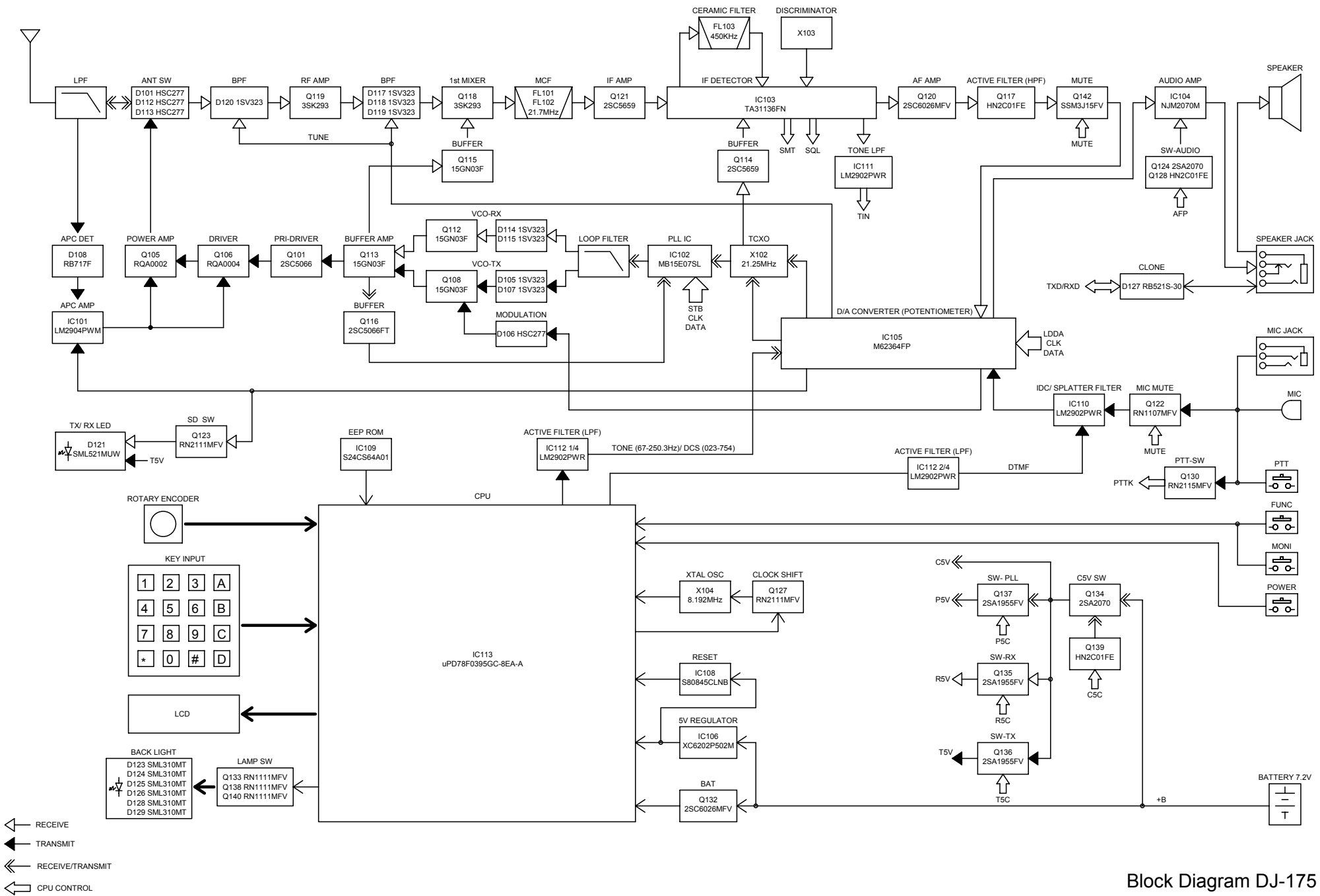
   Modulation Level:3.0kHz (T, E, TFH)/ 1.5KHz (EUK)

   Necessary instrument:(1). SSG

Schematic diagram DJ-175

JK101

R101
56/3W

1

3
2

R102
1k

R103
NC

D101
MVR3338S

T101

T102
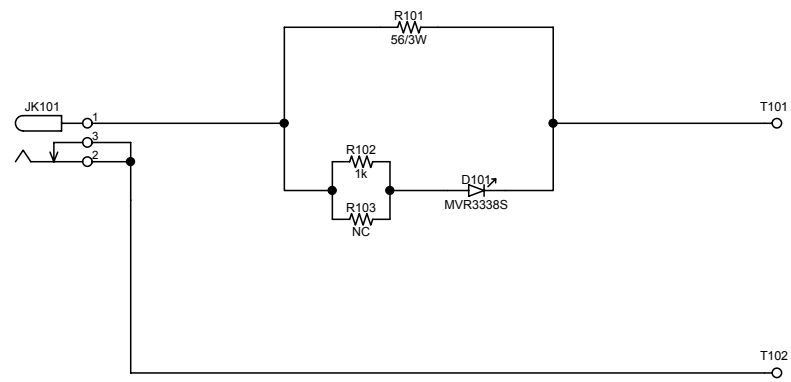
Schematic Diagram EDC-165

Block Diagram DJ-175