

○ TK-780H (K) CONTROL NUIT

SYMBOL	PARTS NUMBER	PARTS NAME	DISCRIPTION
D501	HSB123	DIODE	SURGE ABSORPTION
D502	MINISMD C075-02	POLY SW	CURRENT PROTECTION
D507	DAN202U	DIODE	OR GATE (MIC MUTE)
D508	MA742	DIODE	LIMITTER
D509	MA742	DIODE	LIMITTET
D510	HSC119	DIODE	REVERCE CURRENT PREVENTION
D511	B30-2151-05	LED	LIGHT EMISSION
D512	B30-2171-05	LED	LIGHT EMISSION
D513	B30-2171-05	LED	LIGHT EMISSION
D514	B30-2171-05	LED	LIGHT EMISSION
D515	B30-2171-05	LED	LIGHT EMISSION
D516	B30-2171-05	LED	LIGHT EMISSION
D517	B30-2171-05	LED	LIGHT EMISSION
D518	02DZ9.1(X,Y)	DIODE	CURRENT STABILITY
IC501	TA75W558FU	IC	AMPLIFIER
IC502	TC75W51FU	IC	AMPLIFIER
IC503	TA75W558FU	IC	AMPLIFIER
IC504	TC35453F	IC	AUDIO PROCESSER
IC506	BU4066BCFV	IC	ANALOG SWITCH
IC507	LC73872M	IC	DTMF DECODE
IC508	BU4094BCFV	IC	SHIFT/STORE RESISTER
IC509	RH5VL42C	IC	RESET IC
IC510	AT29C020-90TI	IC	FLASH ROM
IC511	30612M4A-407GP	IC	CPU
IC512	AT2408N10SI2.5	IC	EEPROM
IC513	TA78L05F	IC	5V AVR
IC710	TA75S01F	IC	AMPLIFIER
IC711	TA75S01F	IC	AMPLIFIER
Q501	DTC314TU	TRANSISTOR	MIC MUTE
Q502	DTC144EE	TRANSISTOR	AF MUTE
Q503	2SC4617(S)	TRANSISTOR	AMPLIFIER (NOISE)
Q507	DTC144EE	TRANSISTOR	DC SWITCH (PA)
Q508	2SC4617(S)	TRANSISTOR	DC SWITCH (LED)
Q509	2SC4617(S)	TRANSISTOR	DC SWITCH (LED)
Q510	2SC4619	TRANSISTOR	CLOCK SHIFT
Q511	DTA144WE	TRANSISTOR	DC SWITCH (FSW)
Q512	DTC114EE	TRANSISTOR	DC SWITCH (BLC)
Q513	2SC2873(Y)	TRANSISTOR	DC SWITCH (LED)

PARTS LIST

○ TK-780H (K1) TX/RX UNIT

SYMBOL	PARTS NUMBER	PARTS NAME	DISCRIPTION
D1	HSB123	DIODE	SURGE ABSORPTION
D2	HSB123	DIODE	SURGE ABSORPTION
D3	HSB123	DIODE	SURGE ABSORPTION
D4	HSB123	DIODE	SURGE ABSORPTION
D5	HSB123	DIODE	SURGE ABSORPTION
D6	HSB123	DIODE	SURGE ABSORPTION
D7	02DZ20(Y,Z)	ZENER DIODE	SURGE ABSORPTION
D8	HSB123	DIODE	VOLTAGE REFERENCE
D9	HSB123	DIODE	SURGE ABSORPTION
D11	DAN202U	DIODE	SURGE ABSORPTION
D12	HSB123	DIODE	DC SWITCH
D13	HSB123	DIODE	SURGE ABSORPTION
D14	HSB123	DIODE	SURGE ABSORPTION
D15	DAN235E	DIODE	SURGE ABSORPTION
D16	1SS355	DIODE	RF SWITCH (TX/RX)
D17	HSB123	DIODE	REVERCE CURRENT PREVENTION
D20	1SS355	DIODE	SURGE ABSORPTION
D21	02DZ5.6(X,Y)	ZENER DIODE	REVERCE CURRENT PREVENTION
D22	DAN235E	DIODE	VOLTAGE REFERENCE
D23	DAN235E	DIODE	IF SWITCH (WIDE/NARROW)
D24	MINISMD C075-02	POLY SW	IF SWITCH (WIDE/NARROW)
D25	1SS355	DIODE	CURRENT PROTECTION
D26	1SS355	DIODE	REVERCE CURRENT PREVENTION
D27	HSM88AS	DIODE	REVERCE CURRENT PREVENTION
D28	02DZ15(X,Y)	ZENER DIODE	APC VOLTAGE DITECT
D30	HSM88AS	DIODE	VOLTAGE REFERENCE
D31	1SS355	DIODE	APC VOLTAGE DITECT
D32	22ZR-10D	SURGE ABSORBER	REVERCE CURRENT PREVENTION
D34	02DZ18(X,Y)	ZENER DIODE	SURGE ABSORPTION
D35	MA742	DIODE	VOLTAGE REFERENCE
D36	DA221	DIODE	LIMITTER
D37	DSA3A1	DIODE	PROTECTION
D204	1SV286	VARICAP	REVERCE CURRENT PREVENTION
D205	1SV286	VARICAP	RF BPF TUNEING
D206	1SV282	VARICAP	RF BPF TUNEING
D207	1SV282	VARICAP	RF BPF TUNEING
D208	1SV282	VARICAP	RF BPF TUNEING
D209	HSB123	DIODE	RF BPF TUNEING
D210	HSB123	DIODE	TEMPERATURE COMPENSATION
D211	MA4PH633	DIODE	TEMPERATURE COMPENSATION
D212	MI809	DIODE	ANT SW
IC1	TA75W01FU	IC	ANT SW
IC2	TA75W558FU	IC	AMPLIFIER
IC3	TA75W558FU	IC	AMPLIFIER
IC4	TC4S66F	IC	AMPLIFIER
IC5	M62363FP	IC	SWITCH
IC6	TA75W01FU	IC	D/A CONVERT
			AMPLIFIER

IC7	BU4094BCFV	IC	SHIFT/STORE RESISTER
SYMBOL	PARTS NUMBER	PARTS NAME	DISCRIPTION
IC8	BU4094BCFV	IC	SHIFT/STORE RESISTER
IC9	TA78L05F	IC	5V AVR
IC10	LA4422	IC	AF AMP
IC11	TA31136FN	IC	FM DEMODULATION
IC12	TA78L05F	IC	5V AVR
IC13	AN8009M	IC	9V AVR
IC14	TA7808S	IC	8V AVR
IC15	TC4013BF(N)	IC	POWER SUPPLY LOGIC CIRCUIT CONTROL
IC200	GN2011(Q)	IC	D.B.M.
IC201	LMC7101BIM5	IC	PC/TV CONTROL
IC300	SA7025DK	IC	PLL SYNTHESIZER
IC400	M68702H	IC	POWER MODULE
IC401	NJM2904V	IC	PROTECTION
Q1	2SK1824	TRANSISTOR	AF SWITCH
Q2	2SC2412K(S)	TRANSISTOR	LIPPLE FILTER
Q3	2SC2412K(S)	TRANSISTOR	LIPPLE FILTER
Q4	DTD114EK	TRANSISTOR	DC SWITCH (HOR)
Q5	DTC114EE	TRANSISTOR	DC SWITCH (IGN)
Q6	DTC114EE	TRANSISTOR	DC SWITCH (HOR CONT.)
Q7	2SC4215(Y)	TRANSISTOR	BUFFER AMP.
Q8	DTC363EU	TRANSISTOR	AF MUTE SWITCH
Q9	DTA114YUA	TRANSISTOR	AF MUTE SWITCH
Q10	DTC114EE	TRANSISTOR	DC SWITCH (8R)
Q11	2SA1362(Y)	TRANSISTOR	DC SWITCH (8R)
Q12	2SB1132(Q,R)	TRANSISTOR	DC SWITCH (8T)
Q13	DTC114EE	TRANSISTOR	DC SWITCH (8T)
Q15	2SC2059K(P)	TRANSISTOR	IF AMP
Q16	DTC144EE	TRANSISTOR	DC SWITCH (W/N)
Q17	2SC2412K(S)	TRANSISTOR	APC SWITCH (APC)
Q18	2SK1824	TRANSISTOR	RX MUTE
Q19	2SD2394	TRANSISTOR	APC CONTROLLER
Q20	2SB1188(Q)	TRANSISTOR	APC CONTROLLER
Q21	FMW1	TRANSISTOR	APC CONTROLLER
Q22	DTC114EE	TRANSISTOR	DC SWITCH (TOF)
Q23	DTA114EE	TRANSISTOR	DC SWITCH (W/N)
Q24	DTC144EE	TRANSISTOR	DC SWITCH (W/N)
Q25	DTA114EE	TRANSISTOR	DC SWITCH (TOF)
Q26	DTA114EE	TRANSISTOR	DC SWITCH (PSW)
Q27	2SA1641(S,T)	TRANSISTOR	SB SWITCH
Q28	DTC114EE	TRANSISTOR	DC SWITCH (SB)
Q29	DTC114EE	TRANSISTOR	DC SWITCH (H/L)
Q30	DTA114EE	TRANSISTOR	DC SWITCH (SB)
Q31	DTC114EE	TRANSISTOR	DC SWITCH (SB)
Q32	2SK1824	TRANSISTOR	AF SWITCH
Q33	2SC2712(Y)	TRANSISTOR	PROTECTION
Q202	2SC3357	TRANSISTOR	RF AMP
Q203	2SC3357	TRANSISTOR	IF AMP
Q204	2SC2954	TRANSISTOR	RF AMP
Q300	2SC4215(Y)	TRANSISTOR	BUFFER AMP
Q301	2SC3722K(S)	TRANSISTOR	CHARGE POMP

Q302

2SC3722K(S)

TRANSISTOR

CHARGE POMP

TK-780H Tuning procedure

Before attempting to tune the transceiver, connect the unit to a suitable power supply. Whenever the transmitter tuned, unit must be connected to a suitable dummy load, unless the instruction specify otherwise. The speaker output connector must be terminated with a 4 Ohm dummy load at any time during the tuning and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement at all the time during the tuning.

1.1 Enter into tuning mode

Press "SCN" key while turn on the transceiver. After about 1 second, the tuning mode starts.

1.2 Frequency version selection

The following operation frequency band can be chosen for the set under tuning.

Panel Display	Frequency
VHF F1	146 to 174MHz

Following keys on the panel can be used for frequency selection:

- ▲ key Next (Up) frequency selection
- ▼ key Next (Down) frequency selection
- Channel down key Enter (or confirm)

Once, the channel down key is pressed the set tuning items will be started.

1.3 Transmitter tuning

Use "MON", "A" key to choose tuning item and "SCN", "B", "C" key to adjust tuning requirement.

- 1.3.1 Connect a voltmeter to TP1
- 1.3.2 Be sure the voltage should be below 8.3V at the test channel 3 and more than 2.0V at the test channel 2 in the Transmission and Reception mode.
- 1.3.3 Select the test channel 1 and adjust the transmission frequency to 149.100MHz $\pm 100\text{Hz}$.
- 1.3.4 Select Tuning Item 2, RF power adjustment.
Adjust RF output power to 45W $\pm 1\text{W}$.
- 1.3.5 Select Tuning Item 4, DQT balance adjustment.
Adjust the DQT pulse shape to obtain neat demodulation wave-form.
- 1.3.6 Select Tuning Item 5, Max. deviation adjustment.
Apply a 1000Hz tone with a 50mV RMS level to the Microphone input.
Adjust the maximum deviation to 3.8kHz $\pm 0.1\text{kHz}$ (for the Wide band), or 1.8kHz $\pm 0.05\text{kHz}$ (for the Narrow band).
- 1.3.7 Reduce a 1000Hz tone voltage to 5mV.
Be sure the deviation should be in $\pm 2.5\text{kHz}$ to $\pm 3.5\text{kHz}$.
- 1.3.8 Select Tuning Item 6, QT deviation adjustment.
Adjust the QT deviation to 0.75kHz $\pm 50\text{Hz}$ (for the Wide band), or 0.35kHz $\pm 25\text{kHz}$ (for the Narrow band).
- 1.3.9 Select Tuning Item 7, DQT deviation adjustment.
Adjust the DQT deviation to 0.75kHz $\pm 50\text{Hz}$ (for the Wide band), or 0.35kHz $\pm 25\text{kHz}$ (for the Narrow band).
- 1.3.10 Be sure the DTMF deviation should be in $\pm 2.8\text{kHz}$ to $\pm 3.2\text{kHz}$ (for the Wide band), or $\pm 1.4\text{kHz}$ to $\pm 1.6\text{kHz}$ (for the Narrow band).

- 1.3.11 Be sure the LTR deviation should be in $\pm 0.8\text{kHz}$ to $\pm 1.1\text{kHz}$ (for the Wide band), or $\pm 0.65\text{kHz}$ to $\pm 0.80\text{kHz}$ (for the Narrow band).

1.4 Receiver tuning

- 1.4.1 Select Tuning Item 8, sensitivity adjustment.
Apply a 146.050MHz to the transceiver antenna terminal.
- 1.4.2 Tune L201, L202, L203 and L204 to obtain the maximum receiver SINAD.
- 1.4.3 Tune on the frequencies of 160.050MHz and 173.950MHz in the same way.
- 1.4.4 Select Tuning Item 9, squelch adjustment.
Apply a 160.050MHz with 3dB subtracted from the sensitivity value of 12dB SINAD to the transceiver.
- 1.4.5 Be sure to make the squelch closed once then opened.
- 1.4.6 Set the RF signal level to 8dB SINAD. Confirm the squelch should be opened.
- 1.4.7 Turn off the RF signal. Then confirm the squelch should be closed.