

FCC/MELLON

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(FCC ID:ALH22923110)

(FCC ID:ALH22923120) ←

(FCC ID:ALH22923130)

## TK-690H Tuning Procedures

Preparation for tuning the transceiver.

Before attempting to tune the transceiver, connect the unit to a suitable power supply. Whenever the transmitter is tuned, the unit must be connected to a suitable dummy load, unless the instruction specify otherwise. The speaker output connector must be terminated with a 40hm dummy load at any time during the tuning and connected to an AC voltmeter and an audio distortion meter or a SINAD measurement meter at all the time during the tuning.

### Transceiver tuning

NOTE: To avoid damaging components in the transceiver while tuning, transmitter on time should be kept minimum and if the chassis or heatsink temperature becomes excessively hot, give the transceiver enough time to cool down in the steps 11 through 15 below.

1. Select the frequency to High-edge 36.9MHz,42.9MHz,49.9MHz.
2. Connect a digital voltmeter to CV.
3. Adjust TC302 in the TX-RX unit to obtain the  $1.5V \pm 0.1V$ .
4. Select the frequency to Low-edge 29.8MHz,35.1MHz,40.1MHz.
5. Apply a receive signal without a modulation to the transceiver.
6. Tune L101,L102,L104,L105 to obtain the maximum receive quieting(Minimumoise).  
Reduce the RF signal level as tuning progress.  
Connect a sweep signal generator to CN102.  
Connect a display through an RF detector to CN103 in the TX-RX unit.  
Tune L128,L129,L131,L132,L133.
7. Modulate the receive signal with a 1000 Hz tone at  $\pm 3.0\text{kHz}$  deviation.
8. Set the RF signal level to 1mV.
9. Tune L127,L129,L131,L133 for the minimum audio distortion level.  
Reduce the volume control setting as tuning progress to avoid saturation in the audio amplifier stages.  
Apply a standard signal at the level of 3dB less than the 12dB SINAD.  
Tune the squelch threshold by the PC tuning.

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10. Adjust VR1 in the transmitter final section for  $110W \pm 5\%$  in the transmit mode.
11. Apply a 1000 Hz tone with a 50 mV (RMS) level to the MIC input.
12. Adjust the maximum deviation to  $\pm 5.0\text{kHz}$  or less in the frequency ranges of 29.7 to 50MHz by the UP/DOWN of PC tuning.
13. Reduce the 1000 Hz signal level to 5 mV (RMS).
14. Adjust VR501 in the Control section to obtain  $\pm 3.0\text{kHz}$  of deviation in the transmit mode.

\*\*\* SEMICONDUCTOR PARTS LIST \*\*\*  
FOR MODEL : TK-690HB  
( : Y51-4460-10 )

CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION
Q1	2SC1971	TRANSISTOR TX DRIVE AMP.
Q5	2SC1972	TRANSISTOR TX DRIVE AMP.
Q9	2SC2694	TRANSISTOR FINAL AMP.
Q10	2SC2694	TRANSISTOR FINAL AMP.

\*\*\* SEMICONDUCTOR PARTS LIST \*\*\*  
 FOR MODEL : TK-690HB  
 (FINAL UNIT : X45-3550-10 )

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CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION
D1	1SS184	DIODE TEMPERATURE COMPENSATION
D2	MA4PH633	DIODE ANT SWITH
D3	MA4PH633	DIODE ANT SWITH
D4	MI809	DIODE ANT SWITH
D5	1SS184	DIODE PROTECTOR
D6	HSM88AS	DIODE REFLECTED WAVE RECTIFICATION
D7	22ZR-10D	SURGE ABSORBER SURGE ABSORPTION
D8	SG-5L(R)	DIODE PROTECTION OF REVERSE CONNECTION
D9	HSM88AS	DIODE FORWARD WAVE RECTIFICATION
D10	MI809	DIODE ANT SWITH
Q2	2SC2712(Y)	TRANSISTOR DC AMPLIFIER
Q3	DTC114EK	TRANSISTOR DC SWITCH
Q4	2SC2712(Y)	TRANSISTOR DC SWITCH
	2SD2531	TRANSISTOR APC CONTROLLER
Q7	2SA1162(Y)	TRANSISTOR DC AMPLIFIER
Q8	FMW1	TRANSISTOR APC COMPARATOR
Q11	2SC2712(Y)	TRANSISTOR DC SWITCH

CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION
D102	1SV228	VARIABLE CAPACITANCE DIODE BPF TUNING
D103	1SV228	VARIABLE CAPACITANCE DIODE BPF TUNING
D104	1SV228	VARIABLE CAPACITANCE DIODE BPF TUNING
D105	1SV228	VARIABLE CAPACITANCE DIODE BPF TUNING
D106	MA716	DIODE NOISE DETECTOR
D107	1SS355	DIODE DC SWITCH
D301	1SV228	VARIABLE CAPACITANCE DIODE FREQUENCY CONTROLLER
D302	1SV228	VARIABLE CAPACITANCE DIODE FREQUENCY CONTROLLER
D303	1SV228	VARIABLE CAPACITANCE DIODE FREQUENCY CONTROLLER
D304	1SV228	VARIABLE CAPACITANCE DIODE FREQUENCY CONTROLLER
D305	1SV214	VARIABLE CAPACITANCE DIODE MODULATOR
D306	DAN235K	DIODE RF SWITCH
D501	02CZ18(X,Y)	ZENER DIODE VOLTAGE REFERENCE
.02	1SS355	DIODE REVERSE CURRENT
D503	1SS355	DIODE SURGE ABSORPTION
D504	02CZ5.6(X,Y)	ZENER DIODE VOLTAGE REFERENCE
D505	1SS355	DIODE DC SWITCH
D506	1SS301	DIODE DC SWITCH
D507	02CZ15(X,Y)	ZENER DIODE VOLTAGE REFERENCE
D508	1SS355	DIODE DC SWITCH
D511	1SS301	DIODE DC SWITCH
D512	1SS355	DIODE REVERSE CURRENT PREVENTION
D513	DA204U	DIODE SURGE ABSORPTION
D514	DA204U	DIODE SURGE ABSORPTION
D515	DA204U	DIODE SURGE ABSORPTION
D516	DA204U	DIODE SURGE ABSORPTION
D517	DA204U	DIODE SURGE ABSORPTION
D518	DA204U	DIODE SURGE ABSORPTION
D519	DA204U	DIODE SURGE ABSORPTION
D520	DA204U	DIODE SURGE ABSORPTION
D521	DA204U	DIODE SURGE ABSORPTION
.22	DA204U	DIODE SURGE ABSORPTION
D523	DA204U	DIODE SURGE ABSORPTION
D524	DA204U	DIODE SURGE ABSORPTION
D525	DA204U	DIODE SURGE ABSORPTION
D526	DA204U	DIODE SURGE ABSORPTION
D527	DA204U	DIODE SURGE ABSORPTION
D528	1SS355	DIODE REVERSE CURRENT PREVENTION
D529	1SS355	DIODE REVERSE CURRENT PREVENTION
IC101	TA31136FN	IC FM IC
IC201	BU4094BCF	IC SHIFT REGISTER
IC202	NJM78L05UA	IC AVR
IC203	AN8009M	IC AVR
IC301	SA7025DK	IC PLL IC
IC501	TC4013BF(N)	IC D FF
IC502	NJM4558M	IC LPF
IC503	TA7808S	IC AVR
IC504	TC35453F	IC AUDIO PROCESSOR
IC505	NJM4558M	IC HPF/IDC
IC506	L78LR05B-FA	IC AVR

\*\*\* SEMICONDUCTOR PARTS LIST \*\*\*  
 FOR MODEL : TK-690HB  
 (TX-RX UNIT : X57-5600-10 )

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CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION	
IC508	NJM4558M	IC	LIMITER/BUFFER AMPLIFIER
IC509	MC33172D	IC	BUFFER AMPLIFIER
IC510	NJM4558M	IC	SUMMING AMPLIFIER /LPF
IC511	PCD3312CT	IC	DTMF ENCODER
IC512	M62364FP	IC	D/A CONVERTER
IC513	NJM4558M	IC	LPF/SUMMING AMPLIFIER
IC514	AT24C64N10SI27	IC	EEPROM
IC515	BU4066BCF	IC	ANALOG SWITCH
IC516	784214GC0238EU	IC	CPU
IC517	BU4094BCF	IC	SHIFT REGISTER
IC518	NJM4558M	IC	BUFFER AMPLIFIER
IC519	AT29C020-90TI	IC	FLASH ROM
IC520	TC7S02F	IC	NOR GATE
j21	NJM4558M	IC	BUFFER AMPLIFIER/AMPLIFIER
IC522	TDA8561Q	IC	AUDIO POWER AMPLIFIER
IC523	BU4094BCF	IC	SHIFT REGISTER
IC524	NJM4558M	IC	BUFFER AMPLIFIER/DE-EMPHASIS
IC525	LC73872M	IC	DTMF DECODER
IC526	TA75S01F	IC	AMPLIFIER
Q101	2SK520(K43)	FET	1ST AMPLIFIER
Q102	2SK520(K43)	FET	1ST AMPLIFIER
Q103	2SK508NV(K52)	FET	IF AMPLIFIER
Q105	2SK508NV(K52)	FET	NB GATE
Q106	2SK508NV(K52)	FET	NB GATE
Q107	2SC4215(Y)	TRANSISTOR	IF AMPLIFIER
Q108	2SC4617(S)	TRANSISTOR	SQL AMPLIFIER
Q110	2SK508NV(K52)	FET	RX 1ST MIXER
Q111	2SK508NV(K52)	FET	RX 1ST MIXER
Q112	2SK508NV(K52)	FET	RX 1ST MIXER
Q113	2SK508NV(K52)	FET	RX 1ST MIXER
Q114	DTC144EUA	TRANSISTOR	NB SWITCH
i15	2SK1824	FET	DC SWITCH
Q201	2SB1132(Q,R)	TRANSISTOR	8T SWITCH
Q202	DTC114EUA	TRANSISTOR	8T SWITCH
Q203	2SC2954	TRANSISTOR	TX PRE-DRIVE AMPLIFIER
Q204	DTC114EUA	TRANSISTOR	8R SWITCH
Q205	2SB1132(Q,R)	TRANSISTOR	8R SWITCH
Q301	2SC4116(GR)	TRANSISTOR	RIPPLE FILTER
Q302	2SC4116(GR)	TRANSISTOR	RIPPLE FILTER
Q303	2SC3722K(S)	TRANSISTOR	LOOP FILTER
Q304	2SC3722K(S)	TRANSISTOR	LOOP FILTER
Q306	2SK508NV(K52)	FET	OSC
Q307	2SK508NV(K52)	FET	OSC
Q308	2SC4116(Y)	TRANSISTOR	DC SWITCH
Q309	2SC4116(Y)	TRANSISTOR	DC SWITCH
Q310	DTC144EUA	TRANSISTOR	DC SWITCH
Q311	2SC4215(Y)	TRANSISTOR	BUFFER AMPLIFIER
Q312	2SC4215(Y)	TRANSISTOR	AMPLIFIER
Q313	2SC3357	TRANSISTOR	AMPLIFIER
Q501	DTA114EUA	TRANSISTOR	DC SWITCH

\*\*\* SEMICONDUCTOR PARTS LIST \*\*\*  
 FOR MODEL : TK-690HB  
 (TX-RX UNIT : X57-5600-10)

CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION	
Q502	DTC114EUA	TRANSISTOR	DC SWITCH
Q503	DTC114EUA	TRANSISTOR	DC SWITCH
Q504	DTC363EK	TRANSISTOR	MUTING SWITCH
Q505	DTC144EUA	TRANSISTOR	DC SWITCH
Q506	DTA114YUA	TRANSISTOR	DC SWITCH
Q507	DTC114YUA	TRANSISTOR	DC SWITCH
Q509	DTC144EUA	TRANSISTOR	DC SWITCH
Q510	DTC144EUA	TRANSISTOR	DC SWITCH
Q511	DTC144EUA	TRANSISTOR	DC SWITCH
Q512	DTC144EUA	TRANSISTOR	DC SWITCH
Q513	DTC144EUA	TRANSISTOR	DC SWITCH
Q514	DTA144TKA	TRANSISTOR	MUTING SWITCH
Q516	DTA114TUA	TRANSISTOR	DC SWITCH
Q517	DTC144EUA	TRANSISTOR	DC SWITCH
Q518	DTA114EUA	TRANSISTOR	DC SWITCH
Q519	2SJ506(S)	FET	POWER SWITCH
Q520	DTD114EK	TRANSISTOR	DC SWITCH
Q522	2SC4215(Y)	TRANSISTOR	BEAT SHIFT SWITCH
Q523	DTC114TU	TRANSISTOR	DC SWITCH
Q524	DTC114TU	TRANSISTOR	DC SWITCH
Q525	DTC144EUA	TRANSISTOR	DC SWITCH

\*\*\* SEMICONDUCTOR PARTS LIST \*\*\*  
FOR MODEL : TK-690HB  
(NB UNIT : X58-4610-10 )

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CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION	
D1	1SS184	DIODE	SWITCH
IC1	MC1350D	IC	AGC AMP.
Q1	3SK131(M)	FET	IF AMP.
Q2	2SA1162(Y)	TRANSISTOR	AM DET.
Q3	2SC2712(Y)	TRANSISTOR	RF AMP.
Q4	2SC2712(Y)	TRANSISTOR	AM DET.
Q5	2SC2712(Y)	TRANSISTOR	AF AMP.
Q6	2SC2712(Y)	TRANSISTOR	SWITCH
Q7	2SA1162(Y)	TRANSISTOR	SWITCH