

TUNING PROCEDURE

RX Unit Adjustment(X55-304)

NO	Item	Condition	Method	Test-equipment	SPEC
0	Set up	RX P.C.B set up to jig			
1	Lock voltage Adj.(RX Hi1)	CH6	TC2 Adj.	DVM	$4.5 \pm 0.1V$
2	Lock voltage check(RX Lo1)	CH4	Check	DVM	1V or more
3	Lock voltage Adj.(RX Hi2)	CH3	TC1 Adj.	DVM	$4.5 \pm 0.1V$
4	Lock voltage check(RX Lo2)	CH1	Check	DVM	1V or more
5	Lock voltage check (Sub)	SUB	Check	DVM	1~4.5V
6	BPF Adj.	ANT Input, CN2 Output	L3,L16 Adj.	TG, Spectrumanarizer	Wave form Adj.(465MHz Center Adj.)
7	MCF Adj. (WIDE)	CH4, CN3 Input, CN4 Output	L31,L27,L38,L40,L43 Check	TG, Spectrumanarizer	Wave form Adj.
8	MCF Adj. (NARROW)	CN10, CN3 Input, CN5 Output	L32,L28,L39,L41,L44 Check	TG, Spectrumanarizer	Wave form Adj.
9	Discriminator Adj.(WIDE)	CH4, 1KMOD/3kDEV, -53dBm	L52 Adj.	SG, AFVM	AF MAX
10	Discriminator Adj.(NARROW)	CH10, 1KMOD/1.5kDEV, -53dBm	L53 Adj.	SG, AFVM	AF MAX
11	RX Sensitivity check(WIDE)	CH4, 1KMOD/3kDEV, -113dBm	Check	SG, Distortionmeter	SINAD 12dB or more
12	RX Sensitivity check(NARROW)	CH10, 1KMOD/1.5kDEV, -113dBm	Check	SG, Distortionmeter	SINAD 12dB or more
13	End	RX P.C.B remove from jig			

TX Unit Adjustment(X56-303)

<i>NO</i>	<i>Item</i>	<i>Condition</i>	<i>Method</i>	<i>Test-equipment</i>	<i>SPEC</i>
0	<i>Set up</i>	<i>TX P.C.B set up to jig.</i>			
1	<i>Lock voltage Adj. (TX Hi1)</i>	<i>CH3</i>	<i>TC1 Adj.</i>	<i>DVM</i>	<i>4.5V±0.1V</i>
2	<i>Lock voltage check(TX Lo1)</i>	<i>CH1</i>	<i>Check</i>	<i>DVM</i>	<i>1.0V or more</i>
3	<i>Lock voltage Adj. (TX Hi2)</i>	<i>CH6</i>	<i>TC2 Adj.</i>	<i>DVM</i>	<i>4.5V±0.1V</i>
4	<i>Lock voltage check (TX Lo2)</i>	<i>CH4</i>	<i>Check</i>	<i>DVM</i>	<i>1.0V or more</i>
5	<i>RX Ref check</i>	<i>CH2</i>	<i>Check</i>	<i>freq-counter</i>	<i>19.2MHz</i>
6	<i>EXT Ref check</i>	<i>CH2, SG:10MHz/-10dBm/MOD OFF</i>	<i>Make variations in SG freq.</i>	<i>SG, freq-counter</i>	<i>Ref freq.must be variable</i>
7	<i>DEV check(VCO-A)</i>	<i>CH2, AG:1kHz/50mV</i>	<i>Check</i>	<i>Linerdetector & Oscilloscope</i>	<i>Modulation wave must be out</i>
8	<i>DEV check(VCO-B)</i>	<i>CH5, AG:1kHz/50mV</i>	<i>Check</i>	<i>Linerdetector & Oscilloscope</i>	<i>Modulation wave must be out</i>
9	<i>Tone Dev. check(VCO-A)</i>	<i>CH2, AG:100Hz/0.5Vpp sinewave</i>	<i>Check</i>	<i>Linerdetector & Oscilloscope</i>	<i>Modulation wave must be out</i>
10	<i>Tone Dev. check(VCO-B)</i>	<i>CH5, AG:100Hz/0.5Vpp sinewave</i>	<i>Check</i>	<i>Linerdetector & Oscilloscope</i>	<i>Modulation wave must be out</i>
11	<i>End</i>	<i>TX P.C.B remove from jig.</i>			

***** SEMICONDUCTOR PARTS LIST *****

FOR MODEL : TKR-830
(UHF REPEATER X53-3810-10)
CONTROL UNIT

CIRCUIT PARTS NUMBER DESCRIPTION

SYMBOL

D1	HSM88AS	DIODE	DET
D6	DA204U	DIODE	SURGE PROTECT
D7	DA204U	DIODE	SURGE PROTECT
D8	DA204U	DIODE	SURGE PROTECT
D9	DA204U	DIODE	SURGE PROTECT
D11	DA204U	DIODE	SURGE PROTECT
D13	DA204U	DIODE	SURGE PROTECT
D15	DA204U	DIODE	SURGE PROTECT
D17	DA204U	DIODE	SURGE PROTECT
D18	DA204U	DIODE	SURGE PROTECT
D20	DA204U	DIODE	SURGE PROTECT
D21	DA204U	DIODE	SURGE PROTECT
D22	DA204U	DIODE	SURGE PROTECT
D23	DA204U	DIODE	SURGE PROTECT
D24	DA204U	DIODE	SURGE PROTECT
D25	DA204U	DIODE	SURGE PROTECT
D26	DA204U	DIODE	SURGE PROTECT
D27	DA204U	DIODE	SURGE PROTECT
D28	DA204U	DIODE	SURGE PROTECT
D29	DA204U	DIODE	SURGE PROTECT
D30	DA204U	DIODE	SURGE PROTECT
D31	DA204U	DIODE	SURGE PROTECT
D32	DA204U	DIODE	SURGE PROTECT
D200	MINISMDC075-02	VARISTORCURRENT PROTECT	

D201	B30-2197-05	LED	TX LED
D202	B30-2198-05	LED	RX LED
D203	B30-2198-05	LED	POWER LED
D207	DA204U	DIODE	SURGE PROTECT
D208	DA204U	DIODE	SURGE PROTECT
D209	DA204U	DIODE	SURGE PROTECT
D210	B30-0864-05	LED	REFERENCE LED
D212	LA301DB	LED ASS'Y	7SEG
D213	LA301DB	LED ASS'Y	7SEG
D214	DA204U	DIODE	SURGE PROTECT
IC1	NJM78L08UA	IC	8V AVR
IC2	NJM4558EIC		NOISE AMP
IC3	NJM4558EIC		RX AUDIO FILTER
IC4	NJM4558EIC		SPLUTTER FILTER
IC5	NJM4558EIC		NOTCH FILTER
IC6	NJM78L05UA	IC	5V AVR
IC7	BU4053BCF	IC	AUDIO SW
IC9	BU4094BCFV	IC	SHIFT REGISTER
IC10	MC8800PJUTAK	IC	u-COM
IC11	NJM4558EIC	LPF	
IC12	RH5VL42CIC	RESET IC	
IC13	NJM4558EIC	"AGC,LIMITTER"	
IC14	ADM232LAR	IC	RS-232C DRIVER
IC15	NJM4558EIC		RX AUDIO FILTER
IC101	TC7S08FUIC	AND GATE	
IC102	TC7S32FUIC	OR GATE	
IC103	TC7S02FUIC	NOR GATE	
IC104	M62364FPIC		ELECTRIC VOLUME
IC105	NJM4558EIC	BUFFER	
IC106	NJM4558EIC	BUFFER	
IC107	BU4053BCF	IC	ANALOG SW
IC108	BU4053BCF	IC	ANALOG SW
IC109	TC7S00FUIC	NAND GATE	
IC200	NJM78L05UA	IC	5V AVR
IC201	NJM78L05UA	IC	5V AVR
IC202	NJM78L05UA	IC	5V AVR

IC204	BU2114F IC	SHIFT REGISTER(TX/BUSY)
IC205	BU2114F IC	SHIFT REGISTER(7SEG)
IC206	BU2114F IC	SHIFT REGISTER(7SEG)
Q1	DTC144EUA	TRANSISTOR DIGITAL SQUALCH
Q2	DTC363EKTRANSISTOR	AUDIO MUTE
Q3	2SC4081(R)	TRANSISTOR DET BUFFER
Q4	2SC2712(Y)	TRANSISTOR BUFFER
Q5	DTC144EUA	TRANSISTOR SQUALCH CONTROL
Q6	DTC114EUA	TRANSISTOR SQUALCH CONTROL
Q7	2SD1757KTRANSISTOR	AGC
Q8	DTC114EUA	TRANSISTOR HOOK
Q9	2SC4215(Y)	TRANSISTOR CLOCK SHIFT
Q10	DTA144EUA	TRANSISTOR HOOK
Q200	DTC144EUA	TRANSISTOR REFERENCE LED SELECT
Q201	DTC144EUA	TRANSISTOR REFERENCE LED SELECT
Q202	DTA114EUA	TRANSISTOR REFERENCE LED SELECT
Q203	DTC144EUA	TRANSISTOR REFERENCE LED SELECT
Q204	DTA114EUA	TRANSISTOR REFERENCE LED SELECT
Q211	DTC144EUA	TRANSISTOR REFERENCE MONITER SELECT

***** SEMICONDUCTOR PARTS LIST *****

FOR MODEL : TKR-830
(UHF REPEATER UNIT X55-3040-10)
RX UNIT

CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION
D1	1SS355	DIODE, LOCK DETECT
D2	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D3	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D4	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D6	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D9	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D10	DAN235K	DIODE, IF SWITCH (WIDE/NARROW)
D11	DAN202U	DIODE, DC SWITCH
IC1	SA7025DK	IC, PLL (1ST LOCAL)
IC2	NJM78L05UA	IC, AVR
IC3	BU4094BCFV	IC, LATCH
IC4	TA7808S	IC, AVR
IC5	NJM2904E	IC, DC AMP
IC6	BU4053BCF	IC, AUDIO SWITCH
IC7	TA31137FN	IC, IF IC
IC8	TA31137FN	IC, IF IC
IC9	M62364FP	IC, ELECTRONIC VOLUME
IC10	AT2408N10S12.5	IC, EEPROM
IC11	NJM4558E	IC, AUDIO AMP
IC12	NJM4558E	IC, AUDIO AMP
IC13	NJM78L08UA	IC, AVR
IC14	NJM2904E	IC, DC AMP
IC15	LMX1511TMX	IC, PLL (2ND LOCAL)
IC16	NJM78L05UA	IC, AVR
IC17	NJM78L08UA	IC, AVR
IC18	TC4S81F	IC, AND GATE (LOCK DETECT)

IC19	TC74HC14AF	IC, NOT GATE
Q1	2SC3357	TRANSISTOR, 1ST LOCAL AMP
Q3	2SC3356	TRANSISTOR, 1ST LOCAL AMP
Q5	2SC3357	TRANSISTOR, 1ST LOCAL AMP
Q6	2SC4226(R24)	TRANSISTOR, 1ST LOCAL AMP
Q7	2SC3357	TRANSISTOR, FIRST AMPLIFIER
Q8	2SK508NV(K53)	FET, VCO(1ST LOCAL)
Q9	2SK508NV(K53)	FET, VCO(1ST LOCAL)
Q10	2SC3722K(S)	TRANSISTOR, VCO SWITCH
Q12	2SC3722K(S)	TRANSISTOR, VCO SWITCH
Q13	DTC114EUA	TRANSISTOR, VCO SWITCH
Q14	2SC4226(R24)	TRANSISTOR, 1ST LOCAL AMP
Q15	2SC4215(Y)	TRANSISTOR, 2ND LOCAL AMP
Q16	2SB1386(R)	TRANSISTOR, DC SWITCH (NARROW)
Q17	2SC3722K(S)	TRANSISTOR, RIPPLE FILTER
Q18	DTC114EUA	TRANSISTOR, DC SWITCH (NARROW)
Q19	DTC114EUA	TRANSISTOR, DC SWITCH (NARROW)
Q20	2SB1386(R)	TRANSISTOR, DC SWITCH (WIDE)
Q21	2SK508NV(K52)	FET, VCO (2ND)
Q22	DTC114EUA	TRANSISTOR, DC SWITCH (WIDE)
Q23	2SC4215(Y)	TRANSISTOR, 2ND LOCAL AMP
Q24	2SC3357	TRANSISTOR, IF AMP
Q25	2SC3357	TRANSISTOR, IF AMP
Q26	2SC4081(R)	TRANSISTOR, AF AMP
Q27	2SC4215(Y)	TRANSISTOR, 2ND LOCAL AMP
Q28	2SC4081(R)	TRANSISTOR, SQ SWITCH
Q29	DTC114EUA	TRANSISTOR, SQ SWITCH
Q30	2SC4215(Y)	TRANSISTOR, 2ND LOCAL AMP
Q31	2SC3357	TRANSISTOR, IF AMP
Q32	2SC3357	TRANSISTOR, IF AMP
Q33	2SC4215(Y)	TRANSISTOR, 2ND LOCAL AMP
Q34	2SJ106(GR)	FET, SQ SWITCH
Q35	2SJ106(GR)	FET, SQ SWITCH
Q36	DTC114EUA	TRANSISTOR, OR GATE (SQ CONT)
Q37	DTC114EUA	TRANSISTOR, OR GATE (SQ CONT)
Q38	DTC114EUA	TRANSISTOR, NOT GATE (SQ CONT)

***** SEMICONDUCTOR PARTS LIST *****

FOR MODEL : TKR-830
 (REPRTER UNIT X56-3030-10)
 TX UNIT

CURCUIT SYMBOL	PARTS NUMBER	DESCRIPTION
D1	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D2	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D3	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D4	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D5	1SV283	VARIABLE CAPACITANCE DIODE, MODULATION
D6	1SV283	VARIABLE CAPACITANCE DIODE, MODULATION
D7	1SV128	DIODE, RF SWITCH
D8	DA204U	DIODE, CURRENT CONTROL
D10	1SV128	DIODE, RF SWITCH
D11	1SS355	DIODE, CUEERNT STEERING
D12	1SS355	DIODE, CUEERNT STEERING
D101	1SV128	DIODE, RF SWITCH
D103	1SV128	DIODE, RF SWITCH
D201	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D202	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D203	1SV283	VARIABLE CAPACITANCE DIODE, MODULATION
D205	HSM88AS	DIODE, DET
D206	MINISMDC075-02	VARISTOR, CURRENT PROTECT
D207	MINISMDC075-02	VARISTOR, CURRENT PROTECT
D240	1SV283	VARIABLE CAPACITANCE DIODE, FREQUENCY CON
D301	UDZ4.7(B)	ZENER DIODE, VOLTAGE CONTROL
D302	1SS355	DIODE, CURRENT STEERING
D303	ERZ-M14DK220M	SURGE ABSORBER, SURGE PROTECTOR
D304	1SS355	DIODE, CURRENT STEERING
D305	DSM3MA1	DIODE, REVERCE CONECT PROTECTOR
D306	HSM88AS	DIODE, DET
D308	HSM88AS	DIODE, DET

D310	MINISMD0075-02	VARIATOR,CURRENT PROTECTOR
D311	MINISMD0075-02	VARIATOR,CURRENT PROTECTOR
IC1	TA7808S	IC,AVR
IC2	NJM78L08UA	IC,AVR
IC3	M62364FP	IC,ELECTRIC VOLUME
IC4	BU4094BCFV	IC,SHIFT REGISTER
IC100	TA75S01F	IC,AVR
IC101	LMX1511TMX	IC,PLL
IC103	NJM78L05UA	IC,AVR
IC105	NJM4558F	IC,SUMMING AMP
IC106	AT2408N10S12.5	IC,EEPROM
IC108	NJM78L08UA	IC,AVR
IC109	NJM2904E	IC,BUFFER
IC110	NJM78L05UA	IC,AVR
IC201	SA7025DK	IC,PLL
IC203	NJM2904E	IC,DC AMP
IC204	NJM2903	MIC,COMPARATOR
IC205	TC4S81F	IC,BUFFER
IC301	SA7025DK	IC,PLL
IC302	NJM2904E	IC,COMPARATOR
IC303	NJM2904E	IC,DC AMP
Q1	2SK508NV(K52)	FET,OSC
Q2	2SK508NV(K52)	FET,OSC
Q3	2SC3722K(S)	TRANSISTOR,DCSWITCH
Q4	2SC3722K(S)	TRANSISTOR,DC SWITCH
Q5	2SK1824	FET,DC SWITCH
Q6	2SC4226(R24)	TRANSISTOR,BUFF AMP
Q7	2SC3722K(S)	TRANSISTOR,PIPPLE FILTER
Q8	DTC114EUA	TRANSISTOR,DC SWITCH
Q9	2SC4226(R24)	TRANSISTOR,DC SWITCH
Q10	DTC144EUA	TRANSISTOR,RF AMP
Q11	2SB1386(R)	TRANSISTOR,DC SWITCH
Q12	DTC114EUA	TRANSISTOR,DC SWITCH
Q13	2SC4093(R27)	TRANSISTOR,DC SWITCH
Q14	2SC3357	TRANSISTOR,RF AMP
Q15	2SK302(Y)	FET,BUFF AMP

Q16	DTA114EUA	TRANSISTOR, DC SWITCH
Q17	2SA1586(Y, GR)	TRANSISTOR, DC AMP
Q18	DTC143EUA	TRANSISTOR, DC SWITCH
Q102	2SC4215(Y)	TRANSISTOR, BUFF AMP
Q106	2SC4215(Y)	TRANSISTOR, DUBLER
Q107	2SC4226(R24)	TRANSISTOR, RF AMP
Q110	DTA114EUA	TRANSISTOR, DC SWITCH
Q111	DTC114EUA	TRANSISTOR, DC SWITCH
Q112	2SK1824	FET, DC SWITCH
Q113	2SK1824	FET, DC SWITCH
Q114	DTA114EUA	TRANSISTOR, DC SWITCH
Q115	2SC4215(Y)	TRANSISTOR, BUFF AMP
Q201	2SC4215(Y)	TRANSISTOR, OSC
Q202	2SC4215(Y)	TRANSISTOR, BUFF AMP
Q203	DTC114EUA	TRANSISTOR, DC SWITCH
Q205	2SC4226(R24)	TRANSISTOR, RF AMP
Q206	2SK1824	FET, DC SWITCH
Q240	2SC4215(Y)	TRANSISTOR, OSC
Q241	2SC4215(Y)	TRANSISTOR, BUFF AMP
Q301	2SC4081(R)	TRANSISTOR, DC AMP
Q302	DTC144EUA	TRANSISTOR, DC SWITCH
Q304	DTC144EUA	TRANSISTOR, DC SWITCH
Q305	DTC144EUA	TRANSISTOR, DC SWITCH