FT-90R Alignment

The FT-90R has been carefully aligned at the factory for the specified performance across the amateur band.

Realignment should therefore not be necessary except in the event of a component failure.All component replacement and service should be performed only by an authorized Yaesu representative, or the warranty policy may be voided.

The following procedures cover the sometimes critical and tedious adjustments that are not normally required once the transceiver has left the factory. However, if damage occurs and some parts are replaced, realignment may be required. If a sudden problem occurs during normal operation, it is likely due to component failure; realignment should not be done until after the faulty component has been replaced.

We recommend that servicing be performed only by authorized Yaesu service technicians who are experienced with the circuitry and fully equipped for repair and alignment. Therefore, if a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Authorized Yaesu service technicians realign all circuits and make complete performance checks to ensure compliance with factory specifications after replacing any faulty components. Those who do undertake any of the following alignments are cautioned to proceed at their own risk. Problems caused by unauthorized attempts at realignment are not covered by the warranty policy. Also, Yaesu must reserve the right to change circuits and alignment procedures in the interest of improved performance, without notifying owners. Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty components replaced, and the need for realignment determined to be absolutely necessary. The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy. While most steps do not require all of the equipment listed, the interactions of some adjustments may require that more complex adjustments be performed afterwards. Do not attempt to perform only a single step unless it is clearly isolated electrically from all other steps. Have all test equipment ready before beginning, and follow all of the steps in a section in the order presented.

Required Test Equipment

- 1. RF Signal Generator with calibrated output level at 500 MHz
- 2. Deviation Meter (linear detector)
- 3. AF Millivoltmeter
- 4. SINAD Meter
- 5. Inline Wattmeter with 5% accuracy at 500 MHz
- 6. Regulated DC Power Supply: adjustable from 10 to 17 VDC, 15A
- 7. 50-ohm Non-reactive Dummy Load: 100W at 500 MHz
- 8. Frequency Counter: >0.1 ppm accuracy at 500 MHz
- 9. AF Signal Generator
- 10. DC Voltmeter: high impedance
- 11. VHF/UHF Sampling Coupler
- 12. AF Dummy Load: 4 ohm, 5W
- 13.Oscilloscope
- 14.Spectrum Analyzer

Alignment Preparation & Precautions

A dummy load and inline wattmeter must be connected to the main antenna jack in all procedures that call for transmission, except where specified otherwise. Correct alignment is not possible with an antenna. After completing one step, read the following step to determine whether the same test equipment will be required. If not, remove the test equipment (except dummy load and wattmeter, if connected) before proceeding.

Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20 and 30 C (68 86F). When the transceiver is brought into the shop from hot or cold air it should be allowed some time for thermal equalization with the environment before alignment. If possible, alignments should be made with oscillator shields and circuit boards firmly affixed in place. Also, the test equipment must be thoroughly warmed up before beginning.

Note: Signal levels in dB referred to in this procedure are based on $0 \, dBm = 0.5 \, mV$ (closed circuit).

PLL & Transmitter

Set up the test equipment as shown for transmitter alignment. Maintain the supply voltage at 13.8V DC for all steps.

PLL Reference Frequency

With the wattmeter, dummy load and frequency counter connected to the antenna jack, and while tuned to 435.000 MHz, key the transmitter and adjust TC1001 on the Main Unit, if necessary, so the counter frequency is within 100 Hz of 435.000 MHz.

VHF Transmitter Output

- 1) While tuned to 146.000 MHz, and turn the radio off. Short the Pin #1 and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "HIPO", and rotate the Selector Knob so as to achieve 50 Watts on the wattmeter. Then press and hold the [DISP/SS] button.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "MID1", and rotate the Selector Knob so as to achieve 25 Watts on the wattmeter. Then press and hold the [DISP/SS] button.
- 4) The [←] and [→] button on the panel to select the "MID2", and rotate the Selector Knob so as to achieve 10 Watts on the wattmeter. Then press and hold the [DISP/SS] button.
- 5) The $[\leftarrow]$ and $[\rightarrow]$ button on the panel to select the "LOW", and rotate the Selector Knob so as to achieve 5 Watts on the wattmeter. Then press and hold the [DISP/SS] button.

- 1) While tuned to 146.000 MHz, adjust the AF generator level for 50 mV output at 1kHz to the MIC VHF Transmitter Deviation
- 2) Key the transmitter and the [←] and [→] buttons on the panel to select the "MOD", and rotate the Selector Knob so as to achieve 4.5 kHz deviation on the deviation meter. Then press and hold the [DISP/SS] button.

UHF Transmitter Output

- 1) While tuned to 440.000 MHz, and turn the radio off. Short the Pin #1and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "HIPO", and rotate the Selector Knob so as to achieve 35 Watts on the wattmeter. Then press and hold the [DISP/SS] button.

- 3) The [←] and [→] buttons on the panel to select the "MID1", and rotate the Selector Knob so as to achieve 25 Watts on the wattmeter. Then press and hold the [DISP/SS] button.
- 4) The [←] and [→] button on the panel to select the "MID2", and rotate the Selector Knob so as to achieve 10 Watts on the wattmeter. Then press and hold the [DISP/SS] button.
- 5) The [←] and [→] button on the panel to select the "LOW", and rotate the Selector Knob so as to achieve 5 Watts on the wattmeter. Then press and hold the [DISP/SS] button.

UHF Transmitter Deviation

- 1) While tuned to 440,000 MHz, adjust the AF generator level for 50 mV output at 1kHz to the MIC iack.
- 2) Key the transmitter and the [←] and [→] buttons on the panel to select the "MOD", and rotate the Selector Knob so as to achieve 4.5 kHz deviation on the deviation meter. Then press and hold the IDISP/SSI button.

Receiver

Set up the test equipment as shown below for receiver alignment. Interstage Transformers

VHF S-Meter(S-1 Level) Calibration

- 1) While tuned to 146.000 MHz, and turn the radio off. Short the Pin #1 and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for -2dB μ at the antenna iack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "S-1", and rotate the Selector Knob so as to 1 digit appear on the S-meter on the display. Then press and hold the [DISP/SS] button.

VHF S-Meter(Full) Calibration

- 1) While tuned to 146.000 MHz, and turn the radio off. Short the Pin #land #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for 25dB μ at the antenna jack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "S-F", and rotate the Selector Knob so as to full digit appear on the S-meter on the display. Then press and hold the [DISP/SS] button.

VHF Squelch Threshold Calibration

- 1) While tuned to 146.000 MHz, and turn the radio off. Short the Pin #I and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for -12dB μ at the antenna jack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "SQ-S", and rotate the Selector Knob so as to adjust the Squelch Threshold. Then press and hold the [DISP/SS] button.

VHF Squelch Tight Calibration

- 1) While tuned to 146.000 MHz, and turn the radio off. Short the Pin #1 and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for $-2\text{dB}\,\mu$ at the antenna jack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "SQ-T", and rotate the Selector Knob so as to adjust the Squelch Threshold. Then press and hold the [DISP/SS] button.

UHF S-Meter(S-1 Level) Calibration

- 1) While tuned to 440.000 MHz, and turn the radio off. Short the Pin #land #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for -2dB μ at the antenna jack.
- 3) The [\leftarrow] and [\rightarrow] buttons on the panel to select the "S-1", and rotate the Selector Knob so as to 1 digit appear on the S-meter on the display. Then press and hold the [DISP/SS] button.

UHF S-Meter(Full) Calibration

- 1) While tuned to 440.000 MHz,and turn the radio off. Short the Pin #1 and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for 25dB μ at the antenna jack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "S-F", and rotate the Selector Knob so as to full digit appear on the S-meter on the display. Then press and hold the [DISP/SS] button.

UHF Squelch Threshold Calibration

- 1) While tuned to 440.000 MHz,and turn the radio off. Short the Pin #1and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for -12dB μ at the antenna jack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "SQ-S", and rotate the Selector Knob so as to adjust the Squelch Threshold. Then press and hold the [DISP/SS] button.

UHF Squelch Tight Calibration

- 1) While tuned to 440.000 MHz,and turn the radio off. Short the Pin #1 and #6 of Mic jack to the GND and hold while you turn the radio on. The radio now is in the Alignment Mode.
- 2) The RF signal generator turned to the same frequency, set the generator for ± 3.5 kHz deviation with 1kHz tone modulation, and set the output level for -2dB μ at the antenna jack.
- 3) The $[\leftarrow]$ and $[\rightarrow]$ buttons on the panel to select the "SQ-T", and rotate the Selector Knob so as to adjust the Squelch Threshold. Then press and hold the [DISP/SS] button.

Address	Device name	Description	Application	
MAIN-UNI	T]		' '	
D 1001		UM9957F/TR	ANT SW	
D 1002 D 1004	DIODE DIODE	UM9957F/TR	ANT SW	
D 1004	DIODE	MA742-(TX) MA742-(TX)	APC DETECTOR APC DETECTOR	
D 1007	DIODE	MA742~(TX)	APC DETECTOR	
D 1008	DIODE	MA742-(TX)	APC DETECTOR	• • · · · · · · · · · · · · · · · · · ·
D 1014	DIODE	UM9957F/TR	ANT SW	
D 1015		UM9957F/TR	ANT SW	
D 1016	DIODE	UM9957F/TR	ANT SW	
D 1017 D 1034	DIODE	UM9957F/TR MA80WK-(TX)*	ANT SW TX/RX SW	
D 1035	DIODE	MA80WK-(TX)	DAND ON	
D 1039	DIODE	MA742-(TX)	NOISE DETECTOR	· ·
D 1040	DIODE	MA142WK-(TX)	UNLOCK SW	
D 1041	DIODE	MA6\$121-(TX)	SW	
D 1042 D 1043	DIODE	1SV214 TPH	DCS MOD	
D 1043	SURGE ABSORBER DIODE	P6KA18 RLS135 TE-11	SURGE ABSORBER TX SW	
D 1045	DIODE	RLS135 TE-11	TX SW	
D 1046	DIODE	1SS314 TPH3	TEMP. CONTROL	
D 1047	DIODE	1SS314 TPH3	TEMP. CONTROL	
D 1049	DIODE	1SS314 TPH3	TEMP. CONTROL	
D 1053 D 1054	DIODE DIODE	MA80WK-(TX)	RX SW	
D 1054	DIODE	HSU277TRF MA142WK-(TX)	RX SW TX SW	
D 1057	DIODE	HSU277TRF	RX SW	
D 1059		MA80WK-(TX)	RX SW	
D 1060	DIODE	1SV286(TPL3)	BPF TUNE	
D 1062		1SV286(TPL3)	BPF TUNE	
D 1063 D 1065	DIODE DIODE	1SV286(TPL3) 1SV286(TPL3)	BPF TUNE BPF TUNE	
D 1066	DIODE	1SV217(TPH3)	BPF TUNE	
D 1067	DIODE	1SV217(TPH3)	BPF TUNE	
D 1068	DIODE	1SV217(TPH3)	BPF TUNE	
D 1069	DIODE	1\$V217(TPH3)	BPF TUNE	
D 1073 D 1075	DIODE DIODE	1\$V276(TPH3) HVU359TRF	BPF TUNE BPF TUNE	
D 1076	DIODE	HVU3 50 TRF	BPF TUNE	
D 1077	DIODE	HVU359TRF	BPF TUNE	
D 1078	DIODE	HVU359TRF	BPF TUNE	
D 1079 D 1080	DIODE DIODE	MA142WK-(TX)	BAND SW	
Q 1001	TRANSISTOR	HSC277TRF FMS1 T148	RX SW APC	
Q 1005	TRANSISTOR	UMC5N TR	RX SW	•
Q 1006	TRANSISTOR	IMX1 T110	APC SW	
Q 1007		M67781L	TX PA	
Q 1008 Q 1010	TRANSISTOR	M57788MR UMC5N TR	TX PA RX SW	
Q 1012		2SA1244-Y(TE16L)	APC CONTROL	+
Q 1013	TRANSISTOR	UMC5N TR	RX SW	
	TRANSISTOR	2SC2954-T2	TX RF DRIVER	
	TRANSISTOR	UMC5N TR	RX SW	
	TRANSISTOR TRANSISTOR	2SC2954-T2 2SB1301-T2 ZQ	TX RF DRIVER POWER SW	
	TRANSISTOR	UN9212-(TX)	POWER SW	
	TRANSISTOR	2SC3357-T2 RF	TX PRE DRIVE	İ
Q 1023		BA09FP-E2	9V REG	
	TRANSISTOR	2SC5226-4/5-TL	BUFF	
	TRANSISTOR TRANSISTOR	UMG2N TR 2SC4215Y TE85R	RX SW	
0 1035	TRANSISTOR	2SC4215Y TE85R 2SC4215Y TE85R	AGC IF AMP	•
	TRANSISTOR	2SC5226-4/5-TL	BUFF	
	TRANSISTOR	2SC5226-4/5-TL	BUFF	
Q 1038		TK10930VT1	FM SUBSYSTEM	1
Q 1039		M64076AGP 600C	PLL SUBSYSTEM	i.
	TRANSISTOR TRANSISTOR	2SC4215Y TE85R DTC343TK T146	REF OSC FAN CONTROL	1
Q 1043		NJM2904V-TE1	BPF TUNE / BUFF	
Q 1044		SGM2016AM-T7	RX 1st MIXER	· i
	TRANSISTOR	IMD10A T108	TX SW	1
Q 1048		TA4002F(TE85L)	BUFF	
Q 1050 Q 1051	TRANSISTOR	NJM78L05UA TE1 IMD10A T108	5V REG TX SW	1
	TRANSISTOR	UMD2N TR	TX SW	•
Q 1053	IC	TA4002F(TE85L)	RX RF AMP	•
Q 1054	FET	3SK131-T2B V12	RX RF AMP	i
Q 1055	FET	SGM2016AM-T7	RX RF AMP	

CONT.C. UNIT	Address	Device name	Description	Application
D 2001 DIODE	CNTL-UNIT	1		
D 2003 DIODE			1SS355 TE-17	UNLOCK SW
D. 2004 DIODE HZM27WA-TR SURGE ABSORBER				
D 2005 DIODE DAN222 TL DET				
D 2007 DIODE D 2007 DIODE D 2007 DIOCE D 2010 IC D 5017 DIOCE D 50202 IC D 5017 DIOCE D 50202 IC D 5017 DIOCE D 50204 IC D 60204 IC D 60204 IC D 60204 IC D 60204 IC D 60205 IC D 704WSpt U 12 L D 70205 IC D 704WSpt U 12 L D 70206 TRANSISTOR D 70207 TRANSISTOR D 7021 IC D 7021 IC D 7021 IC D 7021 IC D 7021 TRANSISTOR D 7021 TRANSISTOR D 7021 TRANSISTOR D 7021 TRANSISTOR D 7021 IC D 7021 TRANSISTOR D 7021 TRANSISTOR D 7021 IC D 7022 IT FANNISTOR D				
Q.2001 C MS1132FP 600C VOLUME Q.2004 C Q.2003 TRANSISTOR 25C4617 TL R SW Q.2004 C Q.2005 C TC4W53FU TE12L SW Q.2005 C TC4W53FU TE12L SW Q.2006 TRANSISTOR ZSA174 TL R LIMIT SW Q.2007 C MS1951AML-600C RESET CONTROL SW Q.2008 C AA8005M-(E1) SV REG Q.2010 C AA8005M-(E1) SV REG Q.2010 C TC4W53FU TE12L SW Q.2010 TRANSISTOR ZSA1774 TL R RESET CONTROL RESET CONTROL Q.2010 TRANSISTOR ZSA1774 TL R RESET CONTROL RESET CONTROL Q.2011 TRANSISTOR ZSA1774 TL R RESET CONTROL RESET CONTROL Q.2012 TRANSISTOR UN9212-(TX) RESET CONTROL RESET CONTROL Q.2013 C MJM2303M T2 RESET CONTROL RESET CONTROL Q.2014 TRANSISTOR UN9212-(TX) RESET CONTROL Q.2015 C MJM2302V-TE1 MGCAMP / LIMITER / LPF / BUFF MGCAMP / LIMITER / LPF / BUFF RAMP / LPF Q.2016 C				
Q 2002 ITANSISTOR SCH17 TL R SW				The state of the s
Q 2003 TRANSISTOR 25C4617 TL R SW AF PA			the state of the s	
Q 2005 IC				
Q 2005 IG				AE DA
Q 2006 TRANSISTOR 2SA 1774 TL R LIMIT SW Q 2007 C M 5951 AML-600C RESET CONTROL G 2008 C AN8005M-(E1) 5V REG SW C 2011 TRANSISTOR 2SA 1774 TL R RESET CONTROL SW C 2011 TRANSISTOR ZSA 1774 TL R RESET CONTROL Q 2013 C NJW 2902M T2 RESET CONTROL C 2013 C NJW 2902M T2 RESET CONTROL C 2015 C NJW 2902M T2 RESET CONTROL C 2015 C NJW 2902M T2 RESET CONTROL C 2016 C NJW 2902M T2 RESET CONTROL C 2016 C NJW 2902M T2 RESET CONTROL C 2016 C NJW 2902M T2 RESET CONTROL C 2017 TRANSISTOR LIMIC SM MP / LIMIT SW LIMIT SW C 2017 TRANSISTOR LIMIC SM MP / LIMIT SW LIMIT SW C 2019 C C AW5 541 TL R MUTE SW C 2019 C AT24 G32M - 10SC - 1.8 - TER EEPROM RESET CONTROL C 2019 C AT24 G32M - 10SC - 1.8 - TER EEPROM RESET CONTROL C 2021 TRANSISTOR LIMIT SW LIMIT SW LIMIT SW C 2021 TRANSISTOR LIMIT SW LIMIT SW LIMIT SW C 2021 TRANSISTOR LIMIT SW LI			and the second s	
Q 2007 IC				· · · · · · · · · · · · · · · · · · ·
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Q 2010 IC TC4W33FU TE12L SW Q 2011 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 2012 TRANSISTOR UN9212-CTX) RESET CONTROL Q 2013 IC NM2903M T2 RESET CONTROL Q 2014 IC NM2903W T2 RESET CONTROL Q 2016 IC NM2903V-TE1 MIC AMP / LIMITER / LPF / BUFF Q 2016 IC NM2902V-TE1 HP / LPF / BUFF / PK AMP Q 2016 IC NM2902V-TE1 HP / LPF / BUFF / PK AMP Q 2018 IC NM2902V-TE1 PK AMP / LPF Q 2018 IC TC4W33FU TE12L SW Q 2019 IC TC4W33FU TE12L SW Q 2010 IC HPQ 10 A 174C33N-1716 R0259 MAN OF UP Q 2021 TRANSISTOR 2SC4617 TL R HEAT SW Q 2022 TRANSISTOR 2SC4617 TL R HEAT SW Q 2022 TRANSISTOR UN9212-CTX) WAN AMN OF UP Q 2023 IC HQ 10 MX165CDW-TR CTCSS SUBSYSTEM Q 2024 TRANSISTOR UN9212-CTX) SW Q 2025 TRANSISTOR UN9212-CTX) UNF TX SW Q 2026 TRANSISTOR UN9212-TX UNF TX SW Q 2027 TRANSISTOR UN9212-TX SW Q 2028 TRANSISTOR UN9212-TX SW Q 2029 TRANSISTOR SA3386-T2B R24 CLOCK SHIFT Q 3003 DIODE DAN222 TL SW Q 3003 DIODE DAN222 TL SW Q 3003 DIODE DAN222 TL SW Q 3004 TRANSISTOR 2SC3386-T2B R24 CLOCK SHIFT Q 3005 TRANSISTOR 2SC3386-T2B R24 CLOCK SHIFT Q 3007 IC HD4633840RA56W SUB CPU Q 3007 IC HD4633840RA56W SUB CPU Q 3007 IC NM78L05UA TE12L SW Q 3008 TRANSISTOR 2SC1774 TL R RESET CONTROL Q 3009 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3006 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3007 IC NM78L05UA TE12L POWER SW Q 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3001 TRANSISTOR 2SC5006-TI SHIFT SW Q 4002 THE TX SW Q 5000 TRANSIS				
Q 2011 TRANSISTOR				
Q. 2012 TRANSISTOR				
Q 2013 IC				
Q 2014 IC				
Q 2015 IC				
Q 2016 IC NJM2902V-TE1 PK AMP / LPF Q 2017 TRANSISTOR UMGSN TR MUTE SW Q 2018 IC TC4W53FU TE12L SW Q 2019 IC AT24G32N-10SC-1.8-TER EEPROM Q 2020 TRANSISTOR 2SC4617 TL R HEAT SW Q 2021 IC HD6473337YTF16 R0259 MAIN CPU Q 2022 TRANSISTOR 2SC4617 TL R HEAT SW Q 2023 IC MX16SCDW-TR CTGSS SUBSYSTEM Q 2024 TRANSISTOR UN9212-(TX) SW Q 2025 TRANSISTOR UN9212-(TX) SW Q 2025 TRANSISTOR UN9212-(TX) UHF TX SW Q 2026 TRANSISTOR 2SC3556-T2B R24 CLOCK SHIFT IPANEL-UNIT D 3002 DIODE DAN222 TL SW D 3004 DIODE DAN222 TL SW D 3005 LED NSPW310AS BACK LIGHT D 3003 DIODE DAN222 TL SW D 3006 LED NSPW310AS BACK LIGHT D 3003 DIODE DAN222 TL SW D 3004 LED NSPW310AS BACK LIGHT D 3003 IC HD6433640R45€W SUB CPU Q 3001 IC HD6433640R45€W SUB CPU Q 3001 IC HD6433640R45€W SUB CPU Q 3003 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3006 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3007 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3008 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3001 TRANSISTOR 2SC5006-T1 WHE VCO D 4000 DIODE 1SV286(TPL3) WHF VCO D 4000 DIODE 1SV286(TPL3) WHF VCO D 4000 DIODE 1SV286(TPL3) WHF VCO U 4001 TRANSISTOR 2SC5006-T1 WHE VCO			NJM2902V-TE1	MIC AMP / LIMITER / LPF / BUFF
Q 2017 TRANSISTOR	Q 2015	IC	NJM2902V~TE1	HPF / LPF / BUFF / PK AMP
Q 2018 C	Q 2016	ic	NJM2902V-TE1	PK AMP / LPF
Q 2018 C	Q 2017	TRANSISTOR	UMC5N TR	MUTE SW
Q 2019 IC				
Q 2020 TRANSISTOR				
G 2021 IC HD8473337YTF16 R0259 MAIN CPU G 2022 TRANSISTOR 2SC4617 TL R HEAT SW G 2023 IC MX165CDW-TR CTCSS SUBSYSTEM G 2024 TRANSISTOR UN9212-(TX) W G 2025 TRANSISTOR UN9212-(TX) UHF TX SW G 2026 TRANSISTOR 2SC3356-T2B R24 CLOCK SHIFT D 3003 DIODE HZM27WA-TR SURGE ABSORBER D 3003 DIODE DAN222 TL SW D 3004 DIODE DAN222 TL SW D 3005 LED NSPW310AS BACK LIGHT D 3006 LED NSPW310AS BACK LIGHT D 3006 LED NSPW310AS BACK LIGHT D 3007 LCD A1281 LCD Q 3001 LC HD6433640RA56W SUB CPU Q 3003 IC NJM78L0SUA TE1 SV REG Q 3004 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3006 IC TC4W53FU TE12L P				
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Q 2026 TRANSISTOR				THE PART OF THE PA
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D 3003 DIODE DAN222 TL SW D 3004 DIODE DAN222 TL SW D 3005 LED NSPW310AS BACK LIGHT D 3006 LED NSPW310AS BACK LIGHT D 3001 LCD A1281 LCD Q 3001 IC HD6433640RA56W SUB CPU Q 3003 IC NJM78L05UA TE1 5V REG Q 3004 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3004 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3006 IC TC44W53FU TE12L POWER SW Q 3007 IC NJU7662M(TE1) LCD CONTROL Q 3008 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3019 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3010 TRANSISTOR 2SA1132 T100 Q DIMMER CONTROL Q 3011 TRANSISTOR 2SB1132 T100 Q DIMMER CONTROL Q 3013 IC LC7985ND-8733 LCD DRIVER VIFOOD			1171407WA TD	CURAT ADADDED
D 3004 DIODE DAN222 TL SW D 3005 LED NSPW310AS BACK LIGHT D 3006 LED NSPW310AS BACK LIGHT D 3006 LED NSPW310AS BACK LIGHT D 3001 LCD A1281 LCD Q 3001 IC HD6433640RA\$€W SUB CPU Q 3003 IC NJM78L05UA TE1 5V REG Q 3004 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3005 TRANSISTOR UN9212-(TX) RESET CONTROL Q 3006 IC TC4W53FU TE12L POWER SW Q 3007 IC NJU7662M(TE1) LCD CONTROL Q 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3010 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3011 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3012 TRANSISTOR 2SB1132 T100 Q DIMMER CONTROL Q 3011 TRANSISTOR UN9212-(TX) DIMMER CONTROL Q 3012 TRANSISTOR UN9212-(TX) DIMMER CONTROL Q 3013 IC LC7985ND-8733 LCD DRIVER VCO UNIT				
D 3005 LED				
D 3006				·
DS3001 CCD				
Q 3001 IC				
Q 3003 IC			• '=-'	
Q 3004 TRANSISTOR 2SA1774 TL R RESET CONTROL Q 3005 TRANSISTOR UN9212-(TX) RESET CONTROL Q 3006 IC TC4W55FU TE12L POWER SW C 3007 IC NJU7662M(TE1) LCD CONTROL C 3008 TRANSISTOR 2SA1774 TL R LCD CONTROL C 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL C 3010 TRANSISTOR 2SA1774 TL R LCD CONTROL C 3011 TRANSISTOR 2SA1774 TL R LCD CONTROL C 3012 TRANSISTOR 2SB1132 T100 Q DIMMER CONTROL C 3012 TRANSISTOR 2SB1132 T100 Q DIMMER CONTROL C 3013 IC LC7985ND-8733 LCD DRIVER LCD CONTROL DRIVER LCD DRIVER LCD CONTROL DRIVER			· ·	
Q 3005 TRANSISTOR		and the second s		
Q 3006 IC			2SA1774 TL R	RESET CONTROL
Q 3007 IC			UN9212-(TX)	RESET CONTROL
Q 3008 TRANSISTOR			TC4W53FU TE12L	POWER SW
Q 3009 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3010 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3011 TRANSISTOR 2SB1132 T100 Q DIMMER CONTROL Q 3012 TRANSISTOR UN9212-(TX) DIMMER CONTROL Q 3013 IC LC7985ND-8733 LCD DRIVER	Q 3007	IC	NJU7662M(TE1)	LCD CONTROL
Q 3010 TRANSISTOR 2SA1774 TL R LCD CONTROL Q 3011 TRANSISTOR 2SB1132 T100 Q DIMMER CONTROL Q 3012 TRANSISTOR UN9212-(TX) DIMMER CONTROL DIMMER CONTROL DIMMER CONTROL LCD DRIVER	Q 3008	TRANSISTOR	2SA1774 TL R	LCD CONTROL
Q 3011 TRANSISTOR 2SB132 T100 Q DIMMER CONTROL Q 3012 TRANSISTOR UN9212-(TX) DIMMER CONTROL Q 3013 IC LC7985ND-8733 LCD DRIVER IVCO-UNIT D 4001 DIODE 1SV280(TPH3) UHF VCO D 4002 DIODE 1SV286(TPL3) VHF VCO D 4003 DIODE 1SV281(TPH3) VHF VCO D 4004 DIODE 1SV286(TPL3) VHF MOD D 4005 DIODE 1SV281(TPH3) UHF VCO D 4006 DIODE 1SV281(TPL3) UHF WCO D 4006 DIODE 1SV286(TPL3) UHF MOD Q 4001 TRANSISTOR 2SC5006-T1 SHIFT SW Q 4002 TRANSISTOR 2SC5006-T1 VHF VCO	Q 3009	TRANSISTOR	2SA1774 TL R	LCD CONTROL
Q 3011 TRANSISTOR 2SB132 T100 Q DIMMER CONTROL Q 3012 TRANSISTOR UN9212-(TX) DIMMER CONTROL Q 3013 IC LC7985ND-8733 LCD DRIVER IVCO-UNIT D 4001 DIODE 1SV280(TPH3) UHF VCO D 4002 DIODE 1SV286(TPL3) VHF VCO D 4003 DIODE 1SV281(TPH3) VHF VCO D 4004 DIODE 1SV286(TPL3) VHF MOD D 4005 DIODE 1SV281(TPH3) UHF VCO D 4006 DIODE 1SV281(TPL3) UHF WCO D 4006 DIODE 1SV286(TPL3) UHF MOD Q 4001 TRANSISTOR 2SC5006-T1 SHIFT SW Q 4002 TRANSISTOR 2SC5006-T1 VHF VCO				
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Q 4002 TRANSISTOR 2SC5006-T1 VHF VCO				
0.4000 TRANSIOTOR 0005000 T4				
Q 4003 TRANSISTOR 2SC5006-T1				
Q 4004 TRANSISTOR UN9212-(TX) VHF BAND SW				
Q 4005 TRANSISTOR UN9212-(TX) UHF BAND SW				UHF BAND SW
<u>Q 4006 IC </u>	Q 4006	IC	TA4002F(TE85L)	BUFFER AMP