

C . SEMICONDUCTOR COMPLEMENT AND FUNCTION

REF NO.	TYPE	FUNCTION IN RX	FUNCTION IN TX	MANUFACTURE
< I.C >				
IC 401	LC7132	P L L	P L L	SANYO
IC 402	KIA7217AP	AUDIO POWER AMP	MODULATION	K. E. C
IC 501	KIA358P	AGC CONTROL	MODULATION	K. E. C
IC 701	MC3361BP	WX DETECTOR	MOTOTOLA	MOTOLOLA
IC 901	LG6552D	EXPANDER	COMPANDER	L G
IC 902	GD74HC74	ALERT LATCH		

< TRANSISTOR >

REF NO.	TYPE	FUNCTION IN RX	FUNCTION IN TX	MANUFACTURE
Q 101	KTC3198(GR)	RF ATTENUATOR	NONE	K. E. C
Q 102	KTC3194(Y)	AMP NB	NONE	K. E. C
Q 103	KTK161(GR)	SW NB CIRCUIT	NONE	K. E. C
Q 104	KTA1266(GR)	SW NB CIRCUIT	NONE	K. E. C
Q 105	KTC3198(GR)	SW NB CIRCUIT	NONE	K. E. C
Q 106	KTC3194(Y)	RF AMP	NONE	K. E. C
Q 107	KTC3194(Y)	MIXER	NONE	K. E. C
Q 173	KTC110(M)	VOL ALERT AUDIO	NONE	K. E. C
Q 174	KTC110(M)	SW ALERT AUDIO	NONE	K. E. C
Q 301	KTC3194(Y)	NONE	AMP DOUBLER	K. E. C
Q 302	KTC3194(Y)	NONE	AMP PRE-DRIVER	K. E. C
Q 303	2SC2314	NONE	TX DRIVER AMP	K. E. C
Q 304	KTC2078	NONE	TX POWER AMP	K. E. C
Q 401	KTA1266(GR)	LCD SWITCHING		K. E. C
Q 402	KTA1266(GR)	LCD POWER SWITCHING		K. E. C
Q 404	KTC3198(GR)	AMP PD		K. E. C
Q 405	KTC3198(GR)	AMP PD		K. E. C
Q 406	KTA1266(GR)	NONE	POWER	K. E. C
Q 407	KTC3198(GR)	POWER	NONE	K. E. C
Q 408	KTC3198(GR)	REGULATOR 9.1V		K. E. C
Q 450	KTC3198(GR)	SW CHANNEL UP		K. E. C
Q 451	KTA1266(GR)	SW CHANNEL DOWN		K. E. C
Q 500	KTC3198(GR)	NONE	AMP PA AUDIO	K. E. C
Q 501	KTA1266(GR)	NONE	ALC MODULATION	K. E. C
Q 502	KTC3198(GR)	NONE	ALC MODULATION	K. E. C
Q 503	KTC3198(GR)	NONE	AMP AUDIO	K. E. C
Q 504	KTC3198(GR)	SW S/Q	NONE	K. E. C
Q 505	KTC112(M)	MUTE AUDIO	NONE	K. E. C

Q 506	KTC112(M)	S-METER DRIVER	NONE	K. E. C
Q 507	KTC102(M)	MUTE AUDIO	NONE	K. E. C
Q 705	KTC3198(GR)	BUFFER WX AUDIO	NONE	K. E. C
Q 707	KTC3198(GR)	SW WX AUDIO	NONE	K. E. C
Q 708	KTC110(M)	SW ALERT	NONE	K. E. C
Q 709	KTC102(M)	SW POWER ALERT	NONE	K. E. C
Q 711	KTC3198(GR)	ALERT POWER	NONE	K. E. C
Q 712	KTC110(M)	SW ALERT AUDIO	NONE	K. E. C
Q 732	KTC110(M)	SW WX LED		K. E. C
Q 733	KTC110(M)	SW WX LED	NONE	K. E. C
Q 951	KTC110(M)	MUTE ACE	NONE	K. E. C
Q 952	KTC110(M)	MUTE ACE	NONE	K. E. C
Q 953	KTC3198(GR)	AMP AUDIO	NONE	K. E. C
Q 955	KTC3198(GR)	SW ACE AUDIO	NONE	K. E. C
Q 956	KTC110(M)	SW ALERT LED	NONE	K. E. C

< DIODE >

D 101	1N4148	SW RF GAIN	NONE	R. OHM
D 102	1N60	SW NB CIRCUIT	NONE	UNIZON
D 103	1N60	SW NB CIRCUIT	NONE	UNIZON
D 104	1N4148	LIMITTING	NONE	R. OHM
D 105	1N4148	ATTENUATION	NONE	R. OHM
D 106	1N4148	ATTENUATION	NONE	R. OHM
D 401	1N4148	CPU VCC		R. OHM
D 402	1N4148	CPU VCC		R. OHM
D 403	1N4148	NONE	SW UNLOCK	R. OHM
D 405	1N4148	NONE	SW MIC VCC	R. OHM
D 406	1N4148	NONE	SW MIC VCC	R. OHM
D 501	1N4148	NONE	SW AMP MIC VCC	R. OHM
D 503	1N4148	NONE	MODULATION ALC	R. OHM
D 505	1N4148	SW SQ OFF	NONE	R. OHM
D 506	1N4148	SW SQ OFF	NONE	R. OHM
D 507	1N4148	SW SQ OFF	NONE	R. OHM
D 508	1N4148	NONE	SW VOLUM MUTE	R. OHM
D 509	1N4148	NONE	SW VOLUM MUTE	R. OHM
D 701	1N4148	WX ATTENUATION	NONE	R. OHM
D 702	1N4148	WX ATTENUATION	NONE	R. OHM
D 703	1N4148	RF WX SIGNAL	NONE	R. OHM
D 705	1N4148	SW ALERT	NONE	R. OHM

D 706	1N4148	SW WX AUDIO MUTE	NONE	R. OHM
D 707	1N4148	SW WX AUDIO MUTE	NONE	R. OHM
D 708	1N4148	SW WX AUDIO MUTE	NONE	R. OHM
D 709	1N4148	SW ALERT	NONE	R. OHM
D 710	1N4148	VOLUM ALERT	NONE	R. OHM
D 711	1N4148	SQ WX AUDIO	NONE	R. OHM
D 751	1N4148	SQ WX CIRCUIT	NONE	R. OHM
D 752	1N4148	SQ WX CIRCUIT	NONE	R. OHM
D 753	1N4148	SQ WX CIRCUIT	NONE	R. OHM
D 755	1N4148	SQ WX CIRCUIT	NONE	R. OHM
D 952	1N4148	ALERT LATCH	NONE	R. OHM

*** MANUFACTURER INFORMATION ***

* K.E.C ----- KOREA ELECTRONICS SEMICONDUCTOR CO., LTD.

* MOTOROLA ----- MOTOROLA SEMICONDUCTOR CO., LTD.

* SANYO ----- JAPAN SANYO SEMICONDUCTOR CO., LTD.

* R.OHM ----- R.OHM KOREA SEMICONDUCTOR CO., LTD.

* LG ----- LG KOREA SEMICONDUCTOR CO., LTD.

* UNIZON ----- UNIZON SEMICONDUCTOR CO., LTD.

* NPC ----- NIPPON PRECISION CIRCUITS LTD.

* NAT. ----- NATIONAL SEMICONDUCTOR CO., LTD.

APPENDIX 6

TRANSMITTER TUNE-UP PROCEDURE

A. VCO Voltage Alignment

- a. Connect rf power meter or 50 ohm dummy load to the antenna socket.
- b. Select the operating channel as CH 1.
- c. Connect dc voltmeter between ground and pin 3 of VCO module.
- d. Place the set in RX mode. Adjust the VCO IFT, L402, to obtain 2.0 V reading on dc voltmeter.
- e. Check whether the voltage of channel 40 is between 3.5 to 5.5 V dc under RX mode.
- f. Remove dc voltmeter.

B. Transmitter Alignment

- a. Connect the rf signal measuring equipment between ground and base of transistor Q301. Transmit on Channel 19. Adjust L402 for maximum reading on the equipment.
- b. Connect the rf signal measuring equipment between ground and base of transistor Q302. Transmit on Channel 19. Adjust L301, L302 for maximum reading on the equipment. Repeat if needed. Remove RF probe.
- c. With the rf power meter, adjust L303, 3089 for maximum reading on rf power meter. Repeat if needed.
- d. Repeat step 1 and 2 if needed.
- e. Output power reading on rf power meter should be from 3.8 to 4.0 W. If power exceeds 4.0 W adjust L313 to reduce power and repeat alignment again.

C. Final Check

- a. Output power should be from 3.6 to 4.0 W.
- b. Frequency should be within +/- 100 Hz of assigned channel frequency.
- c. Strength of spurious signals as observed on spectrum analyzer should be 60 dB less than the transmitting signal.

TRANSMITTER TUNE-UP PROCEDURE
FCC ID: AAO2101574

APPENDIX 7

CIRCUITS AND DEVICES TO STABILIZE FREQUENCY

All 40 channels of transmitting, and receiving, frequencies are provided by PLL (Phase Locked Loop) circuitry.

The purpose of the PLL is to provide a multiple number of frequencies from VCO (Voltage Controlled Oscillator) with quartz crystal accuracy and stability from on crystal oscillator reference frequency.

The reference crystal oscillator frequency is 10.24 MHz.

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CIRCUITS FOR SUPPRESSION SPURIOUS RADIATION

The tuning circuit between the output of final amp Q304 and antenna is 4-stage "PI" network C313, L801, C802, L803, C805, L804 and C320, serves as spurious radiation suppressor. This network also serves to match the impedance between TX power amp Q304 and the antenna.

CIRCUITS FOR LIMITING MODULATION

The tuning is adjusted so that the actual power is from 3.6 to 4.0 W. There are no other additional controls for adjusting the tx output power.

MODULATION CONTROL

Modulation signals are filtered with RC network and goes to the audio pre-amp Q503, output signal goes to IC IC402 to make niminal signal level to achieve wanted modulation. To control incoming audio signal for proper modulation level, diode D503 and corresponding feedback network controls IC402 proporational to sampled audio output level. Modulation will not exceed +/- 90% at 1.0 kHz/50% modulation input level plus 20 dB.

DEVICES AND CIRCUITS TO SUPPRESS
SPURIOUS RADIATION AND LIMIT
MODULATION

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APPENDIX 8