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VOLTAGE CHART FOR I. C. 's & VOLTAGE CHART FOR TRANSISTORS 19X

TRANSISTOR VOLTAGE CHART (DC)

CONDITIONS MEASURED ON 19.CH NO SIGNAL NO MODULATION

TR.NO	10	ı	10	2	10	3	10	4	10		20 RX	(20	2	20)3	20	6	20	07	3	01	30	02	30	3
	RX	TX	RX	ТX	RX	TX	RX	TX	RX	TX	SQ	MAX	RX	TX	RX	тх	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
В	2.1	0.2	2.3	0.3	2.4	0.3	1.3	0.1	0.6	0.3	0	0.7	0			0.7		9.0	8.3	7.6	0.3	0.5	0	0.01	0	0.3
С	11.8	12.8	10.8	12.8	7.8	12.8	12.5	12.9	0.1	0.3	0.7	0	0.01	0.03	0.07	0.07	12.8	12.1	1.2	8.3	13.1	13.0	13.3	8.4	13.3	10.4
E	1.5	0.2	1.6	0.1	1.7	0	0.6	0	0.02	0.04	0	0	0.01	0.01	0	0	8.4	8.4	8.4	8.3	0	1.0	0	0	0	0

IC VOLTAGE CHART (DC)

CONDITIONS
MEASURED NO 19 CH
NO SIGNAL
NO MODULATION

IC . NO	IC PIN NO	RX	TX	
	- 1	13.77	13.5V	
	2	12.6V	12.57	
	3	4.IV	4.0V	
	4	8.2V	8. IV	
201	5	1.47	1.37	
201	6	3.4V	3.3V	
1	7	3.4V	3.4V	
	8	1.47	1.4V	
	9	0 V	0 V	
	10	6.8V	6.6V	
	1	7.7٧	7.7V	
	2	0.04V	0.04V	
	3	0.0 3 V	0.03V	
	4	7.7V	7.7٧	
	5	7.7V	7.7V	
	6	0.03V	0.03V	
	7	0.03V	Q.03V	
	8	VE0.0	0.02V	
	9	0.03V	0.02V	
202	10	0.367	OV	
202	- 11	3.5V	3.5∨	
	12	3.7V	3.7V	
	13	OV	ov	
	14	0.8V	4.5V	
	15	1.7V	1.6 V	
	16	1.7V	1.67	
	17	1.6V	3.0V	
	18	7.7V	7.7V	
	19	3.6V	3.6V	
	20	7.5V	Q8V	
	1	2.6V	2.6V	
	3	1.9V	1.9V	
		1.4V	1.4V 2.6V	
	4	1.9V	THE RESERVE OF THE PERSON NAMED IN	
203	5	OV	OV	
	7	1.3 V 2.1 V	7.8V	
	8	5.2V	2.IV 5.4V	
	9	1,37	7. 8 V	

LOGIC TABLE FOR I. C.'S

0 = 0 1 = 8			<u>19x</u>	TRUTH TA	BLE		PAGE 1
CHANNEL	PIN :	# 2	3	4	5	6	
						0	
1	1	0	0	0	0	0	
2	0	1	0	0	0	0	
3	1	1	0	0	0	0	
4	0	0	1	0	0	0	
5	1	0	1 -	0	0	0	
6	0	1	1	0	0	0	
7	1	1	1	0	0	0	
8	0	0	0	1	0	0	
9	1	0	0	1	0	0	
10	0	0	0	0	1	0	
11	1	0	0	0	1	0	
12	0	1	0	0	1	0	
13	1	1 -	0	0	1	0 -	
14	0	0	1	0	1	0	
15	1	0	1	0	1	0	
16	0	1	1	0	1	0	
17	1	1	1	0	1	0	
18	0	0	0	1	1	0	
19	1	0	0	1	1	0	
20	. 0	0	0	0	0	1	
21	1	0	0	0	0	1	
22	0	1	0	0	0	1	
23	1	1	0	0	0	1	
24	0	0	1	0	0	1	
25	1	0	1	0	0	1	
26	0	1	1	0	0	1	
27	1	1	1	0	0	1	
28	0	0	0	1	0	1	
29	1	0	0	1	0	1	
30	0	0	0	0	1	1	
31	1	0	0	0	1,	1	
32	0	1	0	0	1	1	
33	1	1	0	0	1		
	0	0				1	
34	U	U	1	0	1	1	

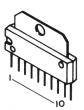
LOGIC TABLE for IC'S CONT'D

0 = 0							
1 = 8			19X TR	UTH TABL	E		PAGE 2
CHANNEL	PIN #	2	3	4	5	6	
35	1	0	1	0	1	1	
36	0	1	1	0	1	1	
37	1	1	1	0	1	1	
38	0	0	0	1	1	1	
39	1	0	0	1	1	1	
40	0	0	0	0	0	0	

SEMICONDUCTOR PIN CONFIGURATION 19X

INTEGRATED CIRCUITS

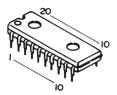
KIA 7205CP



TA73IOP or ANIO3



LC7131



TRANSISTORS

MPS9623 MPS9631

MPS9634 MPS9681 MPS9418





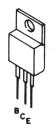


2SCI957 or 2SC23I4

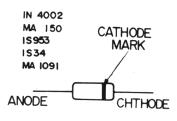


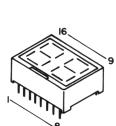


2SC2078 or 2SC1306

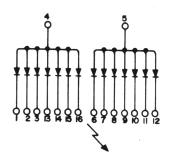


DIODES

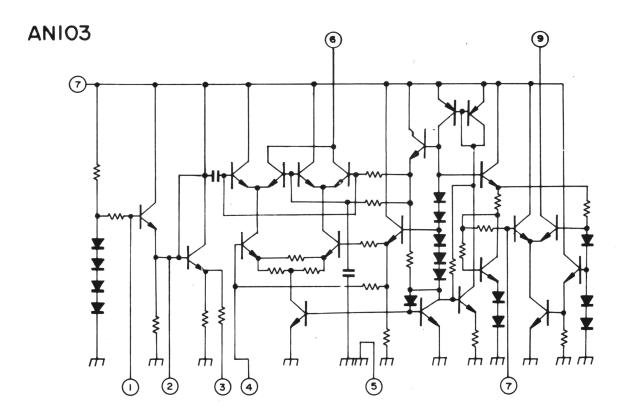




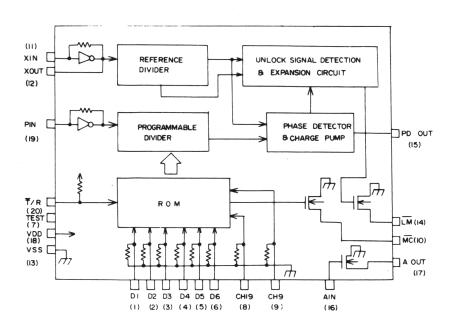
KLR32I



INTERNAL DIAGRAM – IC'S 19X

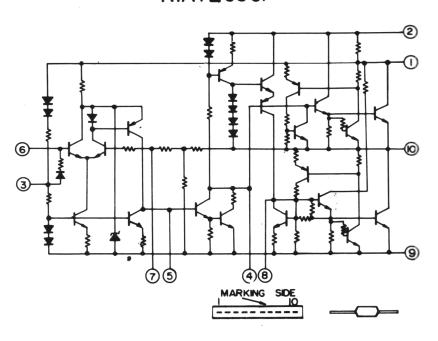


LC7131

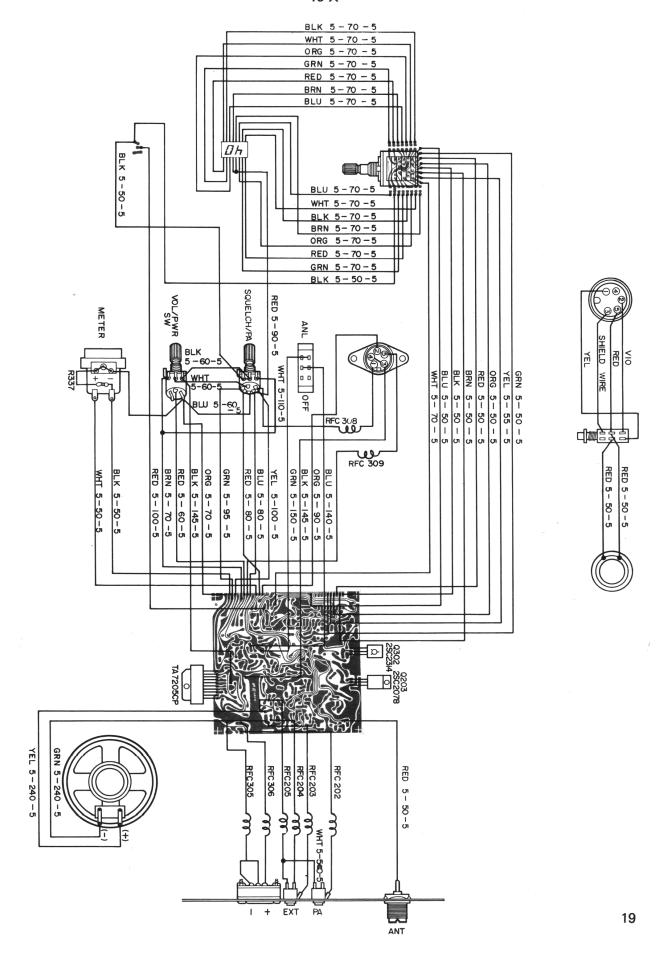


INTERNAL DIAGRAM – IC'S 19X

KIA7205CP



WIRING DIAGRAM 19 X



PARTS LIST

CIRCUIT SYMBOL	DESCRIPTION	PART NUMBER
	Escutcheon	380-408-9-001
	Overlay	260-283-9-001
	Lens (LED Display)	158-041-9-001
	Knob (Channel)	751-209-9-001
	Knob (Control)	751-209-9-002
	Meter (Power)	320-109-9-001
	Volume (50KA W/S.W.)	008-407-9-001
	Volume, Squelch (10KG W.O./S.W.)	008-407-9-002
	Rotary Switch	083-274-9-001
	Slide S.W.	084-099-9-001
	Ant. Receptacle	772-046-9-001
	Earphone Jack	773-108-9-001
	Speaker 3" 8ohm 2W	580-136-9-001
	Power Cord Ass'y.	420-040-9-001
	Housing (3P Connector)	779-019-9-001
	Lug Plate (3P)	744-032-9-001
	Cabinet Cover (Upper)	253-104-9-001
	Cabinet Cover (Bottom)	252-043-9-001
	Bracket (Mounting)	251-522-9-001
	Lever (Mic)	265-027-9-001
	Holder (Mic)	251-515-9-001
	Cartridge	769-116-9-001
	Push S.W. (P-M1 Block)	088-071-9-001
	Coiled Cord w/ Din Plug (Mic)	426-083-9-001
	Cord Wire (Coiled)	420-040-9-002
	Plug (5P)	775-058-9-001
Q 105, 301	Transistor, MPS9426 (B)	177-052-9-001
Q 101, 102	Transistor MPS9426 (C)	176-115-9-001

CIRCUIT SYMBOL	DESCRIPTION	PART NUMBER
Q 103	Transistor, MPS9623 (H)	176-125-9-001
Q 104	Transistor MPS9623 (I)	176-115-9-002
Q 201-203	Transistor, MPS9634 (C)	176-128-9-001
OR Q 201-203	Transistor, MPS9634 (D)	176-115-9-003
Q 206	Transistor, MPS9418 (T)	176-115-9-004
Q 207	Transistor MPS9681 (T)	177-049-9-001
Q 302	Transistor, 2SC1957	172-059-9-001
OR Q 302	Transistor, 2SC2314 (E)	176-120-9-001
Q 303	Transistor, 2SC1306	172-024-9-002
OR Q 303	Transistor, 2SC2078 (E)	172-062-9-001
IC 201	IC 7205 CP	307-272-9-001
OR IC 201	IC KIA7205P	307-107-9-003
IC 202	IC LC131	307-272-9-002
IC 203	IC AN 103	307-272-9-003
OR IC 203	IC TA7310P	307-133-9-004
	LED (Display) TH2010 (0.4")	238-019-9-001
D 208	LED (Lamp) IN 23	158-045-9-001
D 201	Varicap Diode 151658	154-008-9-001
т 201	Transformer (Output)	061-047-9-001
CH 301	Transformer (Choke)	042-041-9-001
RFC 201, 307	Choke Coil 25uH	041-134-9-001
RFC 308, 309	Choke Coil 22uH	041-134-9-002
RFC 305, 306	Choke Coil 10uH	041-134-9-003
RFC 303	Choke Coil 6.8uH	041-134-9-004
RFC 101	Choke Coil 1.5uH	041-134-9-005
RFC 202-205	Choke Coil iuH (Spring Type)	041-134-9-006
RFC 302	Choke Coil 1uH (Bobbin Type)	041-134-9-007
RFC 304	Choke Coil 0.5uH (Spring)	041-134-9-008

PARTS LIST CONT'D 19X

CIRCUIT SYMBOL	DESCRIPTION	PART NUMBER
L 205	Choke Coil 0.45uH	046-039-9-001
L 101	IFT Coil 27MHz	046-039-9-002
L 102	IFT Coil 27MHz	046-039-9-003
L 103, 104, 204	IFT Coil 10.6MHz	046-039-9-004
L 105	IFT Coil 455KHz	046-039-9-005
L 106	IFT Coil 455KHz	046-039-9-006
L 107	IFT Coil 455KHz	046-039-9-007
L 301	IFT Coil 27MHz	046-039-9-008
L 302	IFT Coil 27MHz	046-039-9-009
L 303	IFT Coil 27MHz	046-039-9-010
L 304	IFT Coil 27MHz	046-039-9-011
L 307	IFT Coil 27MHz	046-039-9-012
L 305	IFT Coil 27MHz	046-039-9-013
L 306	IFT Coil 27MHz	046-039-9-014
L 203	IFT Coil V.C.O.	046-039-9-015
CF 2	Ceramic Filter CFU455HT or EFC-L455K40B	140-026-9-001
CF 1	Ceramic Filter (10.5MHz) SPE10.7MJ	140-026-9-002
X 201	Crystal (HC-18/U Type) 10.240MHz	132-036-9-001
RV 103, 202	Semifixed Resistor 20K ohm (B): 8ϕ	008-407-9-003
RV 101, 201	Semifixed Resistor 10K ohm (B): 8ϕ	008-407-9-004
R 215	Metaloxide Resistor 10 ohm 2W	013-063-9-001
R 330	Metaloxide Resistor 10 ohm 1W	011-001-5-100
C 112	Capacitor Poly 470pF 50WV 5%	025-182-9-001
C 223, 360	Capacitor Elec. 220uF 16WV	022-227-9-001
C 221, 225, 228, 303	Capacitor Elec. 47uF 16WV	022-227-9-002
C 128, 214	Capacitor Elec. 33uF 16WV	022-227-9-003
C 207, 211, 209	Capacitor Elec. 10uF 16WV	022-227-9-004

PARTS LIST CONT'D 19X

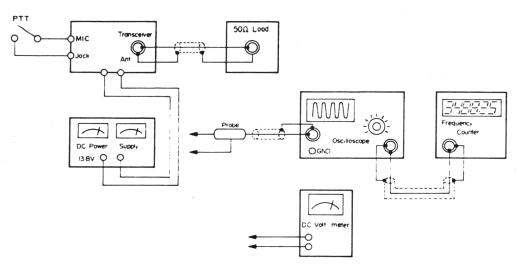
CIRCUIT SYMBOL	DESCRIPTION	PART NUMBER
C 125	Capacitor Elec. 3.3uF 16WV	022-227-9-006
C 123	Capacitor Elec. 2.2uF 16WV	022-227-9-007
C 222	Capacitor Elec. 0.47uF 16WV	022-227-9-008
C 217	Capacitor Elec. 33uF 10WV	022-227-9-009
C 210	Capacitor Elec. 47uF 6.3WV	022-158-9-007
C 213	Capacitor Elec. 1uF 50WV	022-227-9-011
	P.C.B. (LED Lamp)	302-542-9-001
	P.C.B. (LED Display)	302-539-9-001
	P.C.B. (S.W.)	302-543-9-001
	Snow Box	500-503-9-001
	Inner Box	500-503-9-002
	Microphone	562-028-9-001

19 LTD UNIT SPECIFICATIONS & FREQUENCY LISTING

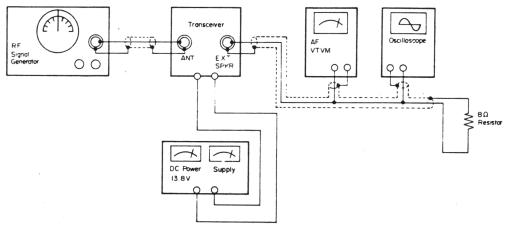
GENERAL									
Channels	40.	Au	tomatic G	Automatic Gain Control		Less than 10 dB change in audio output	dB change	e in audio	output
			(ACC)			for inputs from 10 to 50,000 microvolts.	om 10 to 5	50,000 mic	rovolts.
Frequency Range	26.965 to 27.405 MHz.						1	1, 4000	Α,
Frequency Control	Phase Lock Loop (PLL) synthesizer.	Sq	Squelch		A	Adjustable, tillesiloid less tilali 1,4 v	illesiloid i	555 UIAII 14	
Frequency Tolerance	0.005%.	Ψn	Audio Output Power	t Power	4	4 watts.			
Operating Temperatur-e Range	-30°C to +50°C.	Fre	Frequency Response	esbouse	°C ,	300 – 3000 · Hz.	Hz.		
Microphone	Plug-in type; dynamic.	Di	Distortion			Less than 7% @ 3 watts @ 1000 Hz.	6 @ 3 watt	s @ 1000 F	łz.
Input Voltage	13.8 VDC nom. (positive or negative	Bu	Built-in Speaker	ker	_	16 ohms, round	nud.		
	ground).	EX	External Speaker	aker	∞	8 ohms; disables internal speaker when	bles interr	ıal speaker	when
Current Drain	Transmit: AM full mod., 1.5A (maximum).		(Not Supplied)	lied)	Ö	connected.			
	Receive: Squelched, 0.25A; full audio output 1.0A (nominal).	PA SYSTEM	STEM		-	raticans longeston of the state.	coro	, Vor	
Size	8-1/16"D x $5-1/2$ "W x $1-1/2$ "H.	Power	Power Output	for DA	4 ×	4 Watts IIIto external spearer. 8 ohms: when PA-CB switch is in PA, the PA	A-CB swit	ch is in PA	the PA
Weight	2.7 pounds.	Exten (N	External Speaker for r.A. (Not Supplied)	d)	speal	speaker also monitors the receiver; separate	nitors the	receiver; s	eparate
Antenna Connector	UHF, SO-239.			` ,	jack	jack provided.			
Semiconductors:	16 transistors, 18 diodes, 3 integrated circuits.								
Meter	Illuminated; indicates relative power output								
	and received signal strength.			CLA	SS D CB	CLASS D CB CHANNELS	S		
TRANSMITTER		Channel	MHz	Channel	MHz	Channel	MHz	Channel	MHz
Power Output	4 watts	-	26.965	=	27.085	21	27.215	31	27.315
Toward Carpain	TT: 1	2	26.975	12	27.105	22	27.225	32	27.325
Modulation	High- and low-level, Class B amplitude	က	26.985	13	27.115	23	27.255	33	27.335
Frequency Rechange	300 – 3000 Hz	4 1	27.005	14	27.125	24	27.235	34	27.345
Outmit Imagana	50 ohms unbalanced	ഹ	27.015	ត្ន ទ	27.135	c 7	247.12	30	326 76
Carpat mispodance	of cities, an equation	0 1	27.025	0 7	27.155	07	27.775	37	27.375
RECEIVER		~ ∞	27.055	2 8	27.175	28	27.285	38	27.385
Sensitivity	Less than $1\mu V$ for 10 dB(S+N)/N.	6	27.065	19	27.185	29	27.295	39	27.395
Selectivity	6 dB @ 7 KHz, 60 dB @ 10 KHz.	10	27.075	20	27.205	30	27.305	40	27.405
Image Rejection	80 dB, typical.								
Adjacent-Channel Rejection	60 dB, typical.								
IF Frequencies	Double conversion, 1st: 10.695 MHz. 2nd: 455 KHz.								

TEST EQUIPMENT SET-UP 19 LTD

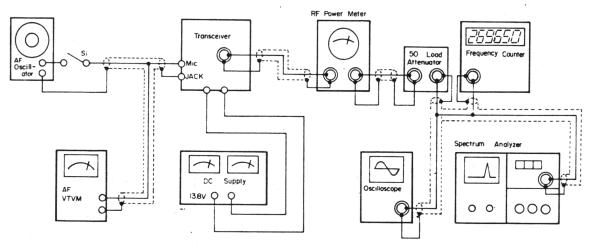
PLL AND CARRIER SECTION



RECEIVER SECTION



TRANSMITTER SECTION



MIKE VOL. CONT. SP DET ANL 9 0 7 0 AMC DET **6** 0 I C I AF POWER S, AGC, SQ TR8 AMC IF AMP TR5 D 5 13.87 13.8 TR 9 IF AMP TR 7 SQ AMP R E G TR4 SO. CONT. SQAMP IF AMP TR 16 R E G TR 6 TR3 2 I C 2/2 MULTI DI5,DI6 R E G FL2 BPF S & RF X | 10.24 MHz D 4 2nd MIX DI3 RX INH L 10 TR13 PREDRIVE TRII XTALOSC TP I2 TX INH ĸ × TR14 DRIVE TR2 PLL IC C 3 EMERGENCY CH9 S401 CHANNEL SELECTOR D 14 POWER 1C 2/2 V C 0 RF AMP TRI5 FINAL -- 8-NORM AL □1,2,3 T/R SW T/R SW **TR** 10 LPF ∠ O 29

19 LTD BLOCK DIAGRAM

Caution: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Adjustments made with a 13.8 volt DC input. Connect low sides of test equipment to ground unless specified otherwise. Connect 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

SYNTHESIZER ALIGNMENT

MECH POLITOMENH	MD ANCCETTED	ADJUST	REMARKS
TEST EQUIPMENT	TRANSCEIVER	ADJ 02.1	KEMAKAS
Input of frequency counter to TP 4 (IC 3 Pin 2).	Ch. 19		Check for 10.240MHz
Input of DC meter to TP 1 (IC 3 Pin 7).	Ch. 19	L 9	Adjust for 3.00 volts. Check for approx. 4.00 volts channel 40.
Input of DC meter to TP 1 (IC 3 Pin 7)	Ch. 1, XMT		Check for 1.85 volts. Check for approx. 4.48 volts on channel 40
Input of oscilloscope to TP 3 (L 3 Secon- dary)	Ch. 19	ь 3	Adjust for maximum RF. (80mV typical) (See figure 1)
Input of frequency counter to TP 5 (IC 2 Pin 3)	Ch. 1		Check for 16.270MHz Check all channels. See Synthesizer Chart for correct frequencies.
Input of frequency counter to TP 6 (IC 2 Pin 6)	Ch.1, XMT		Check for 26.965MHz Check all channels. See Synthesizer Chart for correct frequencies.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector. Note: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19	L 10, 11, 12	Adust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19	ь 15	Adjust for 4.0 watts RF output maximum.