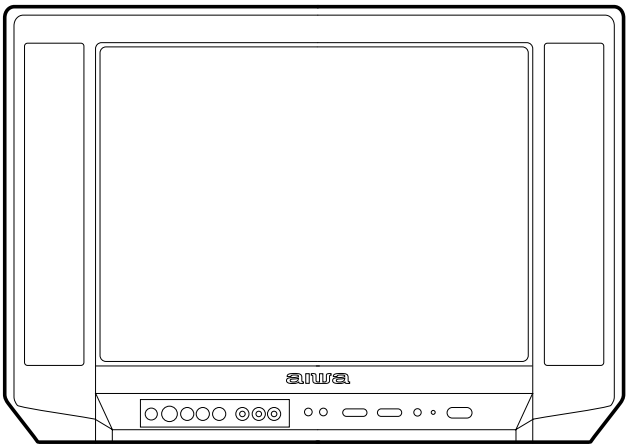
aiwa SERVICE

TV-F2400 U



SERVICE MANUAL

COLOR TELEVISION

- This Service Manual is the “Revision Publishing” and replaces “Simple Manual” (S/M Code No. 09-005-431-9T1).
- This Service Manual does not include “ADJUSTMENT”. This item will be issued in the next Supplement.

aiwa

S/M Code No. 09-007-431-9R1

REVISION DATA

ELETRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC			
	8A-JE7-621-010		IC,M37272MA-052SP
	87-A91-538-010		RCR UNIT,SBX1981-72P
	87-A21-378-010		IC,S-24C04BDP-1A
	87-A20-611-080		IC,M51943BSL-700A
	87-001-536-010		IC,NJM78M05FA
	8Z-JBJ-605-010		IC,TA1268N
	87-A21-103-040		C-IC,MM1454XFBE
	87-A21-022-040		C-IC,BA3880FS
	87-A21-554-010		IC,TA1216AN
	87-A21-283-010		IC,AN5277
	87-A21-220-010		IC,MM1311AD
	87-A21-219-010		IC,TC90A45P
	87-A21-456-010		IC,LA7833
	87-070-417-010		IC,NJM4558DD
	8Z-JBH-605-010		IC,CXA2104S
	87-A21-468-010		IC,STR-F6626
	87-A21-491-010		IC,SE125N
	87-020-969-010		IC,NJM78M09FA
	87-A20-389-010		IC,NJM7809FA
TRANSISTOR			
	87-A30-065-080		TR,2SC2785FE
	87-026-269-080		TR,DTA114ES
	87-A30-066-080		TR,2SA1175FE
	87-026-219-080		TR,DTA144ES
	87-026-218-080		TR,DTC144ES
	89-324-122-080		C-TR,2SC2412KR
	89-110-372-080		C-TR,2SA1037K(R)
	87-A30-062-080		C-TR,KRC104S
	89-324-820-080		TR,2SC2482
	87-A30-366-010		TR,2SD2580
	87-A30-363-010		TR,2SD2531
	89-110-154-080		TR,2SA1015Y
	89-318-155-080		TR,2SC1815GR
	87-026-463-080		TR,2SA933SRS
	89-110-913-080		TR,2SA10910
	87-A30-344-010		TR,2SC5147D
	87-026-462-080		TR,2SC1740SRS
	89-407-742-080		TR,2SD774
	89-118-370-010		TR,2SA1837
	89-347-930-010		TR,2SC4793
DIODE			
	87-070-110-010		LED,SLP-181B-51 RED
	87-017-932-080		ZENER,MTZJ6.2B
	87-020-465-080		DIODE,1SS133
	87-002-743-080		ZENER,MTZJ33B
	87-A40-235-080		ZENER,MTZJ9.1C
	87-A40-690-080		ZENER,MTZJ11B
	87-A40-286-080		DIODE,RGP10JE-5025
	87-A40-348-080		ZENER,MTZJ3.3A
	87-A40-234-080		ZENER,MTZJ5.6A
	87-A40-318-080		ZENER,RM26 V1
	87-070-092-080		DIODE,S5566B
	87-A40-735-090		DIODE,ERC06-15
	87-A40-001-080		ZENER,MTZJ12C
	87-017-593-090		DIODE,RGP15J
	87-017-654-060		DIODE,GBU6JL6131
	87-A40-856-080		DIODE,UF4007
	87-A40-828-080		DIODE,AK 04
	87-A40-825-090		DIODE,RN 1Z
	87-A40-734-010		DIODE,FML-G12S
	87-A40-354-090		DIODE,UF3GL-6251
	8Z-JBH-606-010		VRIS,TNR15G271K
	87-A40-553-080		DIODE,1N4003 LES
	87-017-650-080		DIODE,1SS119
	87-A40-503-080		ZENER,MTZJ39B

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
MAIN C.B			
C001	87-010-405-080		CAP,E 10-50 M 11L SME
C002	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C003	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C004	87-018-127-080		CAP,TC U 470P-50 K B UP050
C005	87-010-401-080		CAP,E 1-50 M 11L SME
C006	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C007	87-010-248-080		CAP,E 220-10 M 11L SME
C008	87-018-123-080		CAP,TC U 220P-50 K B UP050
C009	87-010-401-080		CAP,E 1-50 M 11L SME
C010	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C011	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C012	87-018-119-080		CAP,TC U 100P-50 K B UP050
C013	87-018-119-080		CAP,TC U 100P-50 K B UP050
C014	87-010-263-080		CAP,E 100-10 M 11L SME
C015	87-018-119-080		CAP,TC U 100P-50 K B UP050
C016	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C017	87-018-128-080		CAP,TC U 560P-50 K B UP050
C018	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C019	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C020	87-018-119-080		CAP,TC U 100P-50 K B UP050
C021	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C022	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C023	87-018-123-080		CAP,TC U 220P-50 K B UP050
C024	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C025	87-018-119-080		CAP,TC U 100P-50 K B UP050
C101	87-010-404-080		CAP,E 4.7-50 M 11L SME
C104	87-010-248-080		CAP,E 220-10 M 11L SME
C105	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C106	87-A10-207-080		CAP,TC U 0.01-50 K B UP050
C112	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C113	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C201	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C202	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C203	87-010-400-080		CAP,E 0.47-50 M 11L SME
C204	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C205	87-010-237-080		CAP,E 1000-16 M SME
C206	87-A10-287-080		CAP,M 2200P-50 J
C207	87-010-400-080		CAP,E 0.47-50 M 11L SME
C208	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C209	87-010-385-080		CAP,E 220-25 M SME
C210	87-A11-080-080		CAP,TC U 47P-50 J CH
C211	87-A11-080-080		CAP,TC U 47P-50 J CH
C212	87-A11-080-080		CAP,TC U 47P-50 J CH
C213	87-A11-082-080		CAP,TC U 56P-50 J CH
C214	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C229	87-018-149-080		CAP,TC U 15P-50 J CH UP050
C301	87-010-403-080		CAP,E 3.3-50 M 11L SME
C302	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C305	87-018-126-080		CAP,TC U 390P-50 K B UP050
C306	87-010-405-080		CAP,E 10-50 M 11L SME
C307	87-A10-299-080		CAP,M 0.022-50 J
C308	87-010-401-080		CAP,E 1-50 M 11L SME
C309	87-018-147-080		CAP,TC U 10P-50 J CH UP050
C311	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C312	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C313	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C314	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C315	87-018-123-080		CAP,TC U 220P-50 K B UP050
C317	87-010-402-080		CAP,E 2.2-50 M 11L SME
C318	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C319	87-010-237-080		CAP,E 1000-16 M SME
C321	87-010-404-080		CAP,E 4.7-50 M 11L SME
C322	87-A10-295-080		CAP,M 0.01-50 J
C323	87-016-280-080		CAP,E 3.3-50 M BP SME
C324	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C325	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C326	87-A10-307-080		CAP,M 0.1-50 J
C327	87-018-134-080		CAP,TC U 0.01-16 N Y UP050

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C328	87-010-405-080		CAP,E 10-50 M 11L SME
C329	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C330	87-010-401-080		CAP,E 1-50 M 11L SME
C331	87-010-544-080		CAP,E 0.1-50 M 11L SME
C332	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C333	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C334	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C335	87-015-997-010		CAP,E 2200-16 M SME
C336	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C337	87-018-130-080		CAP,TC U 820P-50 K B UP050
C338	87-010-405-080		CAP,E 10-50 M 11L SME
C339	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C340	87-018-118-080		CAP,TC U 82P-50 J B UP050
C341	87-018-118-080		CAP,TC U 82P-50 J B UP050
C342	87-018-150-080		CAP,TC U 18P-50 J CH UP050
C343	87-A10-307-080		CAP,M 0.1-50 J
C344	87-A10-307-080		CAP,M 0.1-50 J
C501	87-010-405-080		CAP,E 10-50 M 11L SME
C504	87-010-393-080		CAP,E 100-35 M SME
C505	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C508	87-010-398-090		CAP,E 2200-35 M SME
C509	87-A11-245-080		CAP,M/P 0.1-100 J TF-ECQV
C510	87-010-405-080		CAP,E 10-50 M 11L SME
C605	87-A10-972-090		CAP,M/P 0.015-1.25K H DKRG
C607	87-A12-351-090		CAP,M/P 0.013-800 H DKRG
C608	87-A10-833-010		CAP,CER 1000P-2K K R LONG
C609	87-A10-975-090		CAP,M/P 0.68-250 J
C610	87-A10-833-010		CAP,CER 1000P-2K K R LONG
C611	87-010-963-080		CAP,E 2.2-160 M 11L SME
C612	87-010-976-080		CAP,CER 1000P-500 K B DD10
C613	87-016-373-080		CAP,E 10-250 M SME
C614	87-010-976-080		CAP,CER 1000P-500 K B DD10
C615	87-A10-843-080		CAP,CER 680P-1K K R
C616	87-A10-843-080		CAP,CER 680P-1K K R
C617	87-A12-082-090		CAP,E 1000-35 SMG
C618	87-A10-301-080		CAP,M 0.033-50 J
C619	87-A11-987-080		CAP,CER 6800P-250 K R HR
C620	87-010-395-080		CAP,E 330-35 M SME
C621	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C622	87-A11-124-080		CAP,TC U 2200P-50 K B
C623	87-A12-171-080		CAP,E 4.7-50 K SH
C624	87-010-975-080		CAP,CER 330P-500 K B DD10
C626	87-010-405-080		CAP,E 10-50 M 11L SME
C627	87-010-975-080		CAP,CER 330P-500 K B DD10
C629	87-A10-469-080		CAP,CER 2200P-500 K B DD10
C630	87-010-405-080		CAP,E 10-50 M 11L SME
C631	87-010-263-080		CAP,E 100-10 M 11L SME
C655	87-A11-354-090		CAP,E 100-160 M SMG
C714	87-010-221-080		CAP,E 470-10 M SME
C720	87-015-464-080		CAP,E 4.7-16 BP
C721	87-A10-292-080		CAP,M 5600P-50 J
C722	87-A10-296-080		CAP,M 0.012-50 J
C723	87-010-401-080		CAP,E 1-50 M 11L SME
C724	87-010-404-080		CAP,E 4.7-50 M 11L SME
C725	87-010-405-080		CAP,E 10-50 M 11L SME
C726	87-010-404-080		CAP,E 4.7-50 M 11L SME
C727	87-010-112-080		CAP,E 100-16 M 11L SME
C728	87-015-464-080		CAP,E 4.7-16 BP
C729	87-010-404-080		CAP,E 4.7-50 M 11L SME
C730	87-015-464-080		CAP,E 4.7-16 BP
C731	87-A10-288-080		CAP,M 2700P-50 J
C733	87-016-301-080		CAP,TN 3.3-16 K DN
C734	87-015-464-080		CAP,E 4.7-16 BP
C735	87-016-302-080		CAP,TN 10-16 K DN
C736	87-010-401-080		CAP,E 1-50 M 11L SME
C737	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C802	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C804	87-A11-308-090		CAP,M/P 0.033-630 J ECQF6(ZH)
C805	87-A10-846-080		CAP,CER 3300P-1K K R
C806	87-A12-298-090		CAP,E 820-200 M 25B SMH
C807	87-A10-568-010		CAP,PP 1000P-630 J APH
C808	87-010-384-080		CAP,E 100-25 M 11L SME
C809	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C810	87-018-129-080		CAP,TC U 680P-50 K B UP050
C811	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C813	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C814	87-010-260-080		CAP,E 47-25 M 11L SME
C815	87-010-260-080		CAP,E 47-25 M 11L SME
C816	87-010-405-080		CAP,E 10-50 M 11L SME
C817	87-010-398-090		CAP,E 2200-35 M SME
C818	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C820	87-010-405-080		CAP,E 10-50 M 11L SME
C821	87-010-405-080		CAP,E 10-50 M 11L SME
C822	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C824	87-010-237-080		CAP,E 1000-16 M SME
C826	87-010-976-080		CAP,CER 1000P-500 K B DD10
C829	87-010-384-080		CAP,E 100-25 M 11L SME
C831	87-010-405-080		CAP,E 10-50 M 11L SME
C834	87-A10-733-090		CAP,E 220-160 M SK
C835	87-A10-833-010		CAP,CER 1000P-2K K R LONG
C838	87-010-397-010		CAP,E 1000-35 M SME
⚠ C842	87-012-370-010		CAP,CER 3300P-250 M E ECKD
⚠ C843	87-012-370-010		CAP,CER 3300P-250 M E ECKD
⚠ C844	87-012-370-010		CAP,CER 3300P-250 M E ECKD
⚠ C845	87-012-370-010		CAP,CER 3300P-250 M E ECKD
C846	87-A10-207-080		CAP,TC U 0.01-50 K B UP050
CF201	84-LB3-626-080		FLTR,TPS4.5MB2
CF202	84-LB3-627-080		FLTR,SFSH 4.5MDB SIF
CN001	87-009-195-010		CONN,5P V WHT EH
CN601	87-099-762-010		CONN,5P V TBL-P BOSS
CN701	87-A60-628-010		CONN,11P V 2MM JMT
CN705	87-009-262-010		CONN,8P V 52147
CN706	87-099-186-010		CONN,6P V WHT EH
CN707	87-A61-126-080		MALE, 1P TP42097
⚠ CN807	82-481-649-010		CONN,2P V VT-50P
CNA101	8Z-JE5-637-010		CONN ASSY,1P PS-MAIN
CNA103	8A-JE5-627-010		CONN ASSY,2P MAIN-S
CNA602	8Z-JE5-632-010		CONN ASSY,5P V WHT TV-NK-1
CNA604	8Z-JE5-638-010		CONN ASSY,1P FBT-PS
CNA704	8A-JE5-617-010		CONN ASSY,6P V WHT TV-NK-2
CNA801	8A-JE5-619-010		CONN ASSY,3P V MAIN-PS
CNA803	8Z-JE5-636-010		CONN ASSY,2P PS-MAIN 5V
FB001	87-008-372-080		FLTR,EMI BL01 RN1
FB002	87-008-372-080		FLTR,EMI BL01 RN1
FB003	87-008-372-080		FLTR,EMI BL01 RN1
FB004	87-008-372-080		FLTR,EMI BL01 RN1
FB005	87-008-372-080		FLTR,EMI BL01 RN1
FB006	87-008-372-080		FLTR,EMI BL01 RN1
FB007	87-008-372-080		FLTR,EMI BL01 RN1
FB301	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB601	87-003-223-080		F-BEAD, BL02RN2
FB602	87-003-223-080		F-BEAD, BL02RN2
FB801	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB802	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB803	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB804	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB805	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB806	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FB807	87-003-320-080		F-BEAD,-9.0 FBR07HA121NB-00
FR601	87-029-158-060		RES,FUSE 1-1W J
FR608	87-A00-628-090		RES,FUSE 0.68-1W J RF 1SL12.5
FR610	87-A00-628-090		RES,FUSE 0.68-1W J RF 1SL12.5
FR801	87-A00-770-090		RES,FUSE 0.1-1W J RF1SL12.5
HL001	84-LB3-216-010		HLDR,LED
J702	87-A60-324-110		JACK,PIN 6P Y-W-R W/SW
L002	87-005-614-080		COIL,100UH J LAV35
L003	87-005-614-080		COIL,100UH J LAV35
L101	87-005-614-080		COIL,100UH J LAV35
L201	8Z-JBR-612-010		COIL,SIF 4.5MHZ 504BN
L203	87-005-612-080		COIL,68UH J LAV35

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
L204	87-003-282-080		COIL,12UH J LAL02
L205	8Z-JBH-610-010		COIL,PIF-SQ57EL349A 45.75MHZ
L206	87-005-614-080		COIL,100UH J LAV35
L207	87-003-147-080		COIL,22UH J LAL02
L208	87-003-143-080		COIL,4.7UH K LAL02
L301	87-003-097-080		COIL,1.0UH K LAL02
L302	87-005-614-080		COIL,100UH J LAV35
L303	87-005-614-080		COIL,100UH J LAV35
L304	87-003-282-080		COIL,12UH J LAL02
L604	87-A50-607-080		COIL,3.9MH J LHL10
L606	8Z-JE5-621-010		COIL,HLC ZJE-5
L607	87-A50-541-010		COIL,1MH 1.5AP-P
L701	87-005-614-080		COIL,100UH J LAV35
L801	87-A50-170-010		COIL,390UH RCH106
L803	87-A50-176-080		COIL,33UH-PJ87
⚠ PR601	87-A90-429-080		FUSE,1.25A 125V A 251
⚠ PR801	87-A90-409-080		FUSE,1.5A 125V A 251
⚠ PR802	87-A90-210-080		FUSE,7A 125V 251
⚠ PR803	87-A90-070-080		FUSE,3.5A 125V 251
⚠ PS801	87-A90-717-010		P-COUPLER,PC123FY2
⚠ PT801	8A-JE5-622-010		PT,U SW AJE-5
R315	87-025-380-080		RES,M/F 15K-1/6W F
R316	87-025-427-080		RES,M/F 27K-1/6W F
R506	87-A00-143-090		RES,M/F 1.0-1W J RSF(S)
R508	87-A00-653-090		RES,M/F 270-1W J RSF(S)
R604	87-A00-565-090		RES,M/F 1.2K-7W J RSU7
R612	87-A00-629-090		RES,M/F 5.6-1W J RSF(S)
R626	87-A00-676-090		RES,M/F 100-7W J RSV7
R723	87-A00-130-080		RES,M/F 62K-1/6W F
R801	87-A00-661-010		RES,CEM 27-2W J BGR2U
R802	87-A00-160-090		RES,M/F 33-2W J RSF(S)
R803	87-A00-356-090		RES,M/F 22-2W J RSS2X
R804	87-A00-633-090		RES,CEM 0.47-10W J RGC
R805	87-A00-170-090		RES,M/F 82K-3W J RSF(S)
R806	87-A00-380-090		RES,M/F 39K-3W J RSS H2
R811	87-A00-646-090		RES,CEM 0.1-5W K RGC5
R824	87-A00-315-090		RES,M/F 1K-1W J RSF(S)
R833	87-A00-199-090		RES,M/F 12K-3W J RSF(S)
R834	87-A00-223-090		RES,M/F 47K-2W J RSF(S)
R844	87-A00-254-090		RES,M/F 0.68-2W J
⚠ RY801	87-A91-390-010		RELAY,AC12V G5PA-1-8
S002	87-A91-525-080		SW,TACT SKQNLA
S003	87-A91-525-080		SW,TACT SKQNLA
S004	87-A91-525-080		SW,TACT SKQNLA
S005	87-A91-525-080		SW,TACT SKQNLA
S006	87-A91-525-080		SW,TACT SKQNLA
S007	87-A91-525-080		SW,TACT SKQNLA
S801	87-A91-410-010		SW,AC PUSH 1-1-1 ESB92SH1B
SFR501	87-024-429-080		SFR,1K H RH063MC
SFR601	87-024-434-080		SFR,22K H RH063MC
SFR602	87-024-429-080		SFR,1K H RH063MC
SFR603	87-A90-385-080		SFR,22K H DIA6 EVM
SWF201	8Z-JBH-633-010		FLTR,SAW M1969M
⚠ T601	8Z-JE5-606-010		FBT,D NX-4523 ZJE-5
⚠ T602	85-JT2-653-010		PT,HDT-TV141-2
⚠ TH801	87-A91-579-010		POS-THMS,PTH451BG3R0Q140
TU101	8Z-JBE-610-010		TU UNIT,USA ENV56D74G3
X001	87-A70-124-080		VIB,CER 8.0MHZ
X301	87-A70-007-080		VIB,XTAL 3.58MHZ AQC-1001
X302	87-030-327-010		VIB,CER 503.500KHZ CSB F30

AUDIO C.B

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C401	87-010-404-080		CAP,E 4.7-50 M 11L SME
C402	87-A10-295-080		CAP,M 0.01-50 J
C403	87-A10-295-080		CAP,M 0.01-50 J
C404	87-A10-307-080		CAP,M 0.1-50 J
C405	87-010-404-080		CAP,E 4.7-50 M 11L SME
C406	87-010-260-080		CAP,E 47-25 M 11L SME
C407	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C408	87-010-405-080		CAP,E 10-50 M 11L SME
C409	87-010-404-080		CAP,E 4.7-50 M 11L SME
C410	87-010-404-080		CAP,E 4.7-50 M 11L SME
C411	87-010-404-080		CAP,E 4.7-50 M 11L SME
C413	87-A10-295-080		CAP,M 0.01-50 J
C414	87-A10-305-080		CAP,M 0.068-50 J
C415	87-A10-293-080		CAP,M 6800P-50 J
C416	87-010-260-080		CAP,E 47-25 M 11L SME
C417	87-010-404-080		CAP,E 4.7-50 M 11L SME
C418	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C419	87-010-404-080		CAP,E 4.7-50 M 11L SME
C420	87-010-404-080		CAP,E 4.7-50 M 11L SME
C421	87-010-404-080		CAP,E 4.7-50 M 11L SME
C422	87-A10-293-080		CAP,M 6800P-50 J
C424	87-010-260-080		CAP,E 47-25 M 11L SME
C425	87-A10-305-080		CAP,M 0.068-50 J
C426	87-A10-295-080		CAP,M 0.01-50 J
C427	87-010-404-080		CAP,E 4.7-50 M 11L SME
C428	87-010-189-080		C-CAP,S 8200P-50 K B
C429	87-012-365-080		C-CAP,S 0.027-25 K B
C430	87-010-401-080		CAP,E 1-50 M 11L SME
C431	87-010-189-080		C-CAP,S 8200P-50 K B
C432	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C433	87-010-260-080		CAP,E 47-25 M 11L SME
C434	87-012-365-080		C-CAP,S 0.027-25 K B
C435	87-010-401-080		CAP,E 1-50 M 11L SME
C436	87-010-401-080		CAP,E 1-50 M 11L SME
C437	87-010-401-080		CAP,E 1-50 M 11L SME
C438	87-010-178-080		C-CAP,S 1000P-50 K B C2012
C439	87-A10-307-080		CAP,M 0.1-50 J
C440	87-A10-307-080		CAP,M 0.1-50 J
C441	87-A10-307-080		CAP,M 0.1-50 J
C442	87-010-401-080		CAP,E 1-50 M 11L SME
C443	87-010-405-080		CAP,E 10-50 M 11L SME
C444	87-010-405-080		CAP,E 10-50 M 11L SME
C445	87-010-405-080		CAP,E 10-50 M 11L SME
C446	87-010-405-080		CAP,E 10-50 M 11L SME
C447	87-010-405-080		CAP,E 10-50 M 11L SME
C448	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C449	87-010-402-080		CAP,E 2.2-50 M 11L SME
C450	87-010-247-080		CAP,E 100-50 M SME
C451	87-010-388-080		CAP,E 1000-25 M SME
C452	87-010-388-080		CAP,E 1000-25 M SME
C453	87-010-178-080		C-CAP,S 1000P-50 K B C2012
C454	87-010-399-090		CAP,E 3300-35 M SME
C455	87-010-393-080		CAP,E 100-35 M SME
C460	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C464	87-010-260-080		CAP,E 47-25 M 11L SME
C465	87-010-178-080		C-CAP,S 1000P-50 K B C2012
C466	87-A10-295-080		CAP,M 0.01-50 J
C467	87-010-401-080		CAP,E 1-50 M 11L SME
C468	87-A10-295-080		CAP,M 0.01-50 J
C469	87-A10-295-080		CAP,M 0.01-50 J
C470	87-010-154-080		C-CAP,S 10P-50 D CH GRM
C471	87-012-155-080		C-CAP,S 180P-50 J CH GRM
C472	87-A10-295-080		CAP,M 0.01-50 J
C473	87-A10-295-080		CAP,M 0.01-50 J
C474	87-A10-295-080		CAP,M 0.01-50 J
C475	87-010-178-080		C-CAP,S 1000P-50 K B C2012
C476	87-010-260-080		CAP,E 47-25 M 11L SME
C477	87-010-316-080		C-CAP,S 33P-50 J CH GRM
C478	87-010-316-080		C-CAP,S 33P-50 J CH GRM
C479	87-010-318-080		C-CAP,S 47P-50 J CH GRM
C480	87-010-316-080		C-CAP,S 33P-50 J CH GRM
C481	87-010-316-080		C-CAP,S 33P-50 J CH GRM
C482	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C483	87-010-260-080		CAP,E 47-25 M 11L SME
C484	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C486	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C487	87-010-196-080		C-CAP,S 0.1-25 Z F C2012

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C488	87-010-384-080		CAP,E 100-25 M 11L SME
C489	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C492	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C493	87-A10-307-080		CAP,M 0.1-50 J
C494	87-A10-307-080		CAP,M 0.1-50 J
C495	87-010-400-080		CAP,E 0.47-50 M 11L SME
C496	87-010-400-080		CAP,E 0.47-50 M 11L SME
C497	87-010-405-080		CAP,E 10-50 M 11L SME
C751	87-010-545-080		CAP,E 0.22-50 M 11L SME
C752	87-010-402-080		CAP,E 2.2-50 M 11L SME
C753	87-010-545-080		CAP,E 0.22-50 M 11L SME
C754	87-010-402-080		CAP,E 2.2-50 M 11L SME
C755	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C756	87-010-545-080		CAP,E 0.22-50 M 11L SME
C757	87-010-402-080		CAP,E 2.2-50 M 11L SME
C758	87-010-545-080		CAP,E 0.22-50 M 11L SME
C759	87-010-402-080		CAP,E 2.2-50 M 11L SME
C760	87-010-197-080		C-CAP,S 0.01-25 K B C2012
C761	87-010-314-080		C-CAP,S 22P-50 J CH GRM
C762	87-010-314-080		C-CAP,S 22P-50 J CH GRM
C763	87-010-405-080		CAP,E 10-50 M 11L SME
C764	87-010-401-080		CAP,E 1-50 M 11L SME
C765	87-010-382-080		CAP,E 22-25 M 11L SME
C766	87-010-402-080		CAP,E 2.2-50 M 11L SME
C767	87-010-401-080		CAP,E 1-50 M 11L SME
C768	87-010-402-080		CAP,E 2.2-50 M 11L SME
C769	87-010-405-080		CAP,E 10-50 M 11L SME
C770	87-010-405-080		CAP,E 10-50 M 11L SME
C780	87-010-405-080		CAP,E 10-50 M 11L SME
C781	87-010-405-080		CAP,E 10-50 M 11L SME
CN401	87-009-314-010		CONN,8P V 51048
CN404	8Z-JE5-640-010		CONN ASSY,4P SP-25
CN404	87-049-469-010		CONN,4P V WHT EH
CN405	87-009-317-010		CONN,11P V 51048
CN409	87-009-033-010		CONN,5P V WHT PH
CNA402	8A-JE7-610-010		CONN ASSY,6P V WHT AU-MAIN
CNA403	8A-JE7-611-010		CONN ASSY,11P V WHT AU-VD
CNA408	8Z-JE7-663-010		CONN ASSY,2P COMB-NK
CNA414	8A-JE7-626-010		CONN ASSY,1P AU-MAIN
DL401	87-A91-598-010		DELAY LINE,350NS EQFK5-MT
FR401	87-A00-478-090		RES,FUSE 2.2-1W J
FR402	87-A00-478-090		RES,FUSE 2.2-1W J
J401	87-A60-420-010		JACK,3.5 ST (MSC)
J402	87-A61-296-010		JACK,PIN 3P +S ALL GOLD YKC22-
L401	87-005-614-080		COIL,100UH J LAV35
L403	87-005-614-080		COIL,100UH J LAV35
L404	87-005-614-080		COIL,100UH J LAV35
L405	87-003-284-080		COIL,27UH J LAL02
L406	87-003-284-080		COIL,27UH J LAL02
L407	87-A50-555-010		COIL,100UH K 7212M-101K
R432	87-A00-739-090		RES,M/F 1-7W K RSV7
R447	87-A00-667-090		RES,M/F 680-2W J RSF(S)
R448	87-A00-667-090		RES,M/F 680-2W J RSF(S)
W401	8A-JE7-612-010		F-CABLE,8P 2.0 70MM
W405	8A-JE7-613-010		F-CABLE,11P 2.0 70MM

NK C.B

C901	87-010-405-080		CAP,E 10-50 M 11L SME
C902	87-010-968-080		CAP,CER 680P-2K K B
C903	87-010-405-080		CAP,E 10-50 M 11L SME
C906	87-010-400-080		CAP,E 0.47-50 M 11L SME
C907	87-010-235-080		CAP,E 470-16 M SME
C908	87-A11-108-080		CAP,TC U 680P-50 J CH
C909	87-A11-110-080		CAP,TC U 820P-50 J CH
C910	87-A11-108-080		CAP,TC U 680P-50 J CH
C911	87-A11-106-080		CAP,TC U 560P-50 J CH
C912	87-A11-106-080		CAP,TC U 560P-50 J CH
C913	87-A11-106-080		CAP,TC U 560P-50 J CH
C914	87-A10-052-080		CAP,E 2.2-250
C915	87-010-260-080		CAP,E 47-25 M 11L SME
C916	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C917	87-010-970-090		CAP,CER 4700P-2K K B DE
C951	87-010-381-080		CAP,E 330-16 M SME
C953	87-018-119-080		CAP,TC U 100P-50 K B UP050
C954	87-010-405-080		CAP,E 10-50 M 11L SME
C955	87-010-405-080		CAP,E 10-50 M 11L SME
C956	87-010-405-080		CAP,E 10-50 M 11L SME
C957	87-018-122-080		CAP,TC U 180P-50 K B UP050
C958	87-018-119-080		CAP,TC U 100P-50 K B UP050
C959	87-A10-050-010		CAP,CER 4700P-500 K
C960	87-010-221-080		CAP,E 470-10 M SME
C961	87-A12-168-080		CAP,E 33-160 M SMG
C962	87-A12-010-080		CAP,M/P 0.047-250 J ECQE2
C963	87-A10-283-080		CAP,M 1000P-50 J
C964	87-A10-283-080		CAP,M 1000P-50 J
C965	87-010-963-080		CAP,E 2.2-160 M 11L SME
C966	87-A12-014-080		CAP,M/P 0.1-250 J ECQE2
C967	87-A10-303-080		CAP,M 0.047-50 J
C968	87-010-221-080		CAP,E 470-10 M SME
CN901	87-009-034-010		CONN,6P V WHT PH
CN902	87-009-195-010		CONN,5P V WHT EH
CN903	87-A61-126-080		MALE, 1P TP42097
CN904	87-A61-060-080		CONN,1P V RED TP00706
CN951	87-009-030-010		CONN,2P V WHT PH
CN952	8A-JE7-620-010		CONN ASSY,2P VM-NK
CN952	87-099-043-010		CONN,2P V WHT EH
L901	87-005-608-080		COIL,33UH J LAV35
L902	87-005-608-080		COIL,33UH J LAV35
L903	87-005-608-080		COIL,33UH J LAV35
L951	87-005-482-080		COIL,56UH J FLR50
L952	87-005-481-080		COIL,47UH J FLR50
R901	87-A00-242-090		RES,M/F 8.2K-3W J RSF(S)
R902	87-A00-242-090		RES,M/F 8.2K-3W J RSF(S)
R903	87-A00-242-090		RES,M/F 8.2K-3W J RSF(S)
R968	87-022-382-090		RES,M/F 120-2W J
R969	87-A00-638-080		RES,M/F 47-1/2W J SPR
R970	87-A00-634-080		RES,M/F 2.7-1/4W J SPR
R971	87-A00-636-080		RES,M/F 560-1/4W J SPR
R973	87-A00-637-080		RES,M/F 1K-1/4W J SPR
R974	87-022-556-090		RES,M/F 180-3W J
R976	87-A00-636-080		RES,M/F 560-1/4W J SPR
R977	87-A00-634-080		RES,M/F 2.7-1/4W J SPR
R978	87-A00-635-080		RES,M/F 47-1/4W J SPR
SO901	8A-JE7-670-010		SOCKET,CRT 11P HPS1521-013411

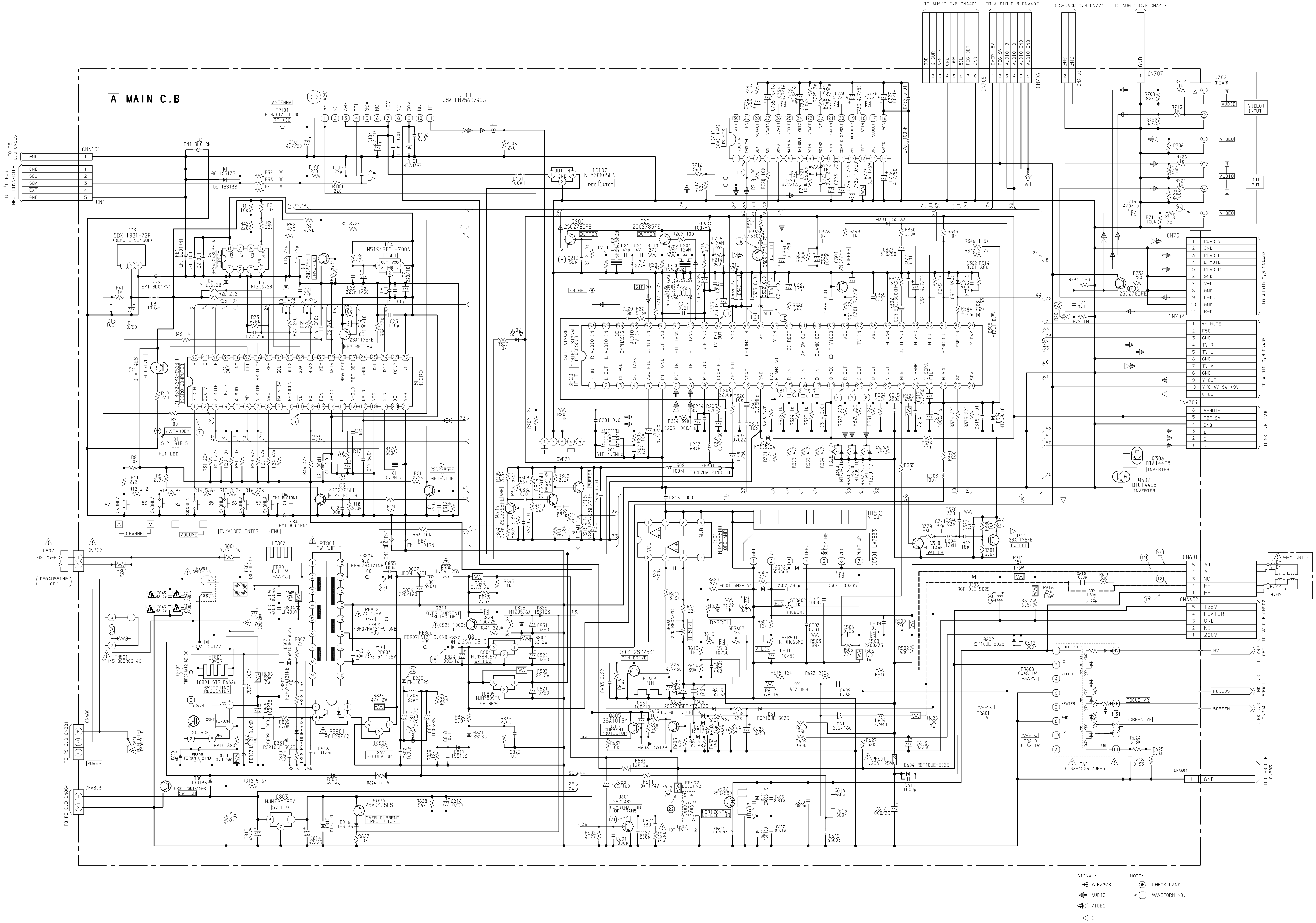
S-JK C.B

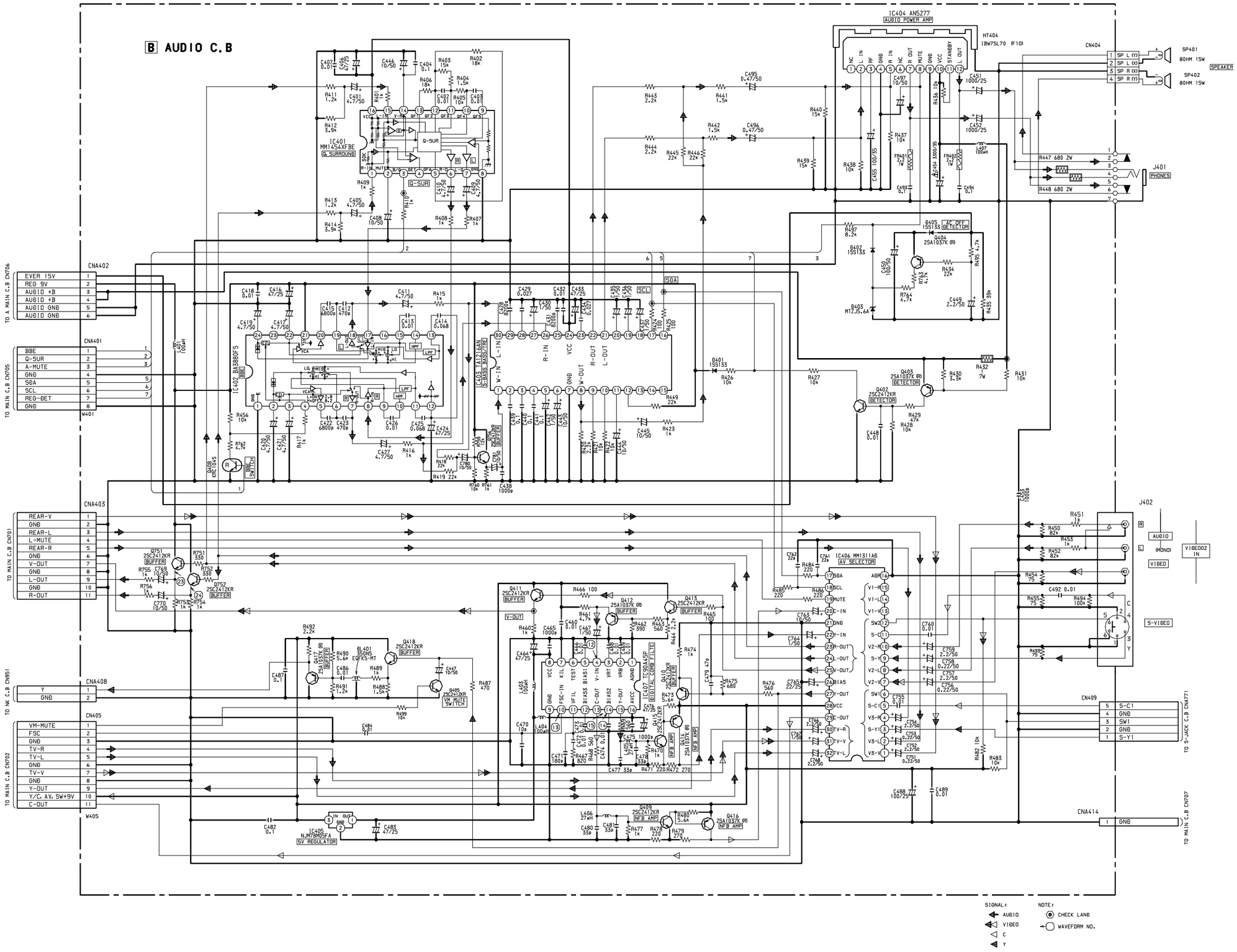
C771	87-010-322-080		C-CAP,S 100P-50 J CH GRM
C772	87-010-197-080		C-CAP,S 0.01-25 K B C2012
CN771	87-009-345-010		CONN,2P H WHT PH
CNA771	8Z-JE5-631-010		CONN ASSY,5P S-JK
J771	87-A61-174-010		JACK,Y/CYKF51-5558

PS C.B

⚠!	C881	87-A10-688-090	CAP,M/P 0.22-275 K (B81133)
⚠!	C883	87-A10-688-090	CAP,M/P 0.22-275 K (B81133)
	C887	87-010-388-080	CAP,E 1000-25 M SME
	CN881	87-A61-299-010	CONN,4P B 5-VB
⚠	CN882	87-099-674-010	CONN,2P V VA
	CN883	87-A61-126-080	MALE, 1P TP42097
	CN884	87-A60-937-010	CONN,2P V VH
	CN885	87-A61-126-080	MALE, 1P TP42097
⚠	F881	87-A91-106-010	FUSE,5A 125V T SER233
⚠	FC881	87-033-213-080	FUSE CLAMP,PFC5000
⚠	FC882	87-033-213-080	FUSE CLAMP,PFC5000
⚠	LF881	87-A91-453-010	FLTR,LINE PLH10A7003R6P02B1
⚠	LF882	87-A91-626-010	FLTR,LINE ELF21V018A
⚠	PT881	8Z-JBH-614-010	PT,US TP8155T
	R881	87-023-102-080	RES,SD 4.7M-1/2W K

SCHEMATIC DIAGRAM – 1 (MAIN)

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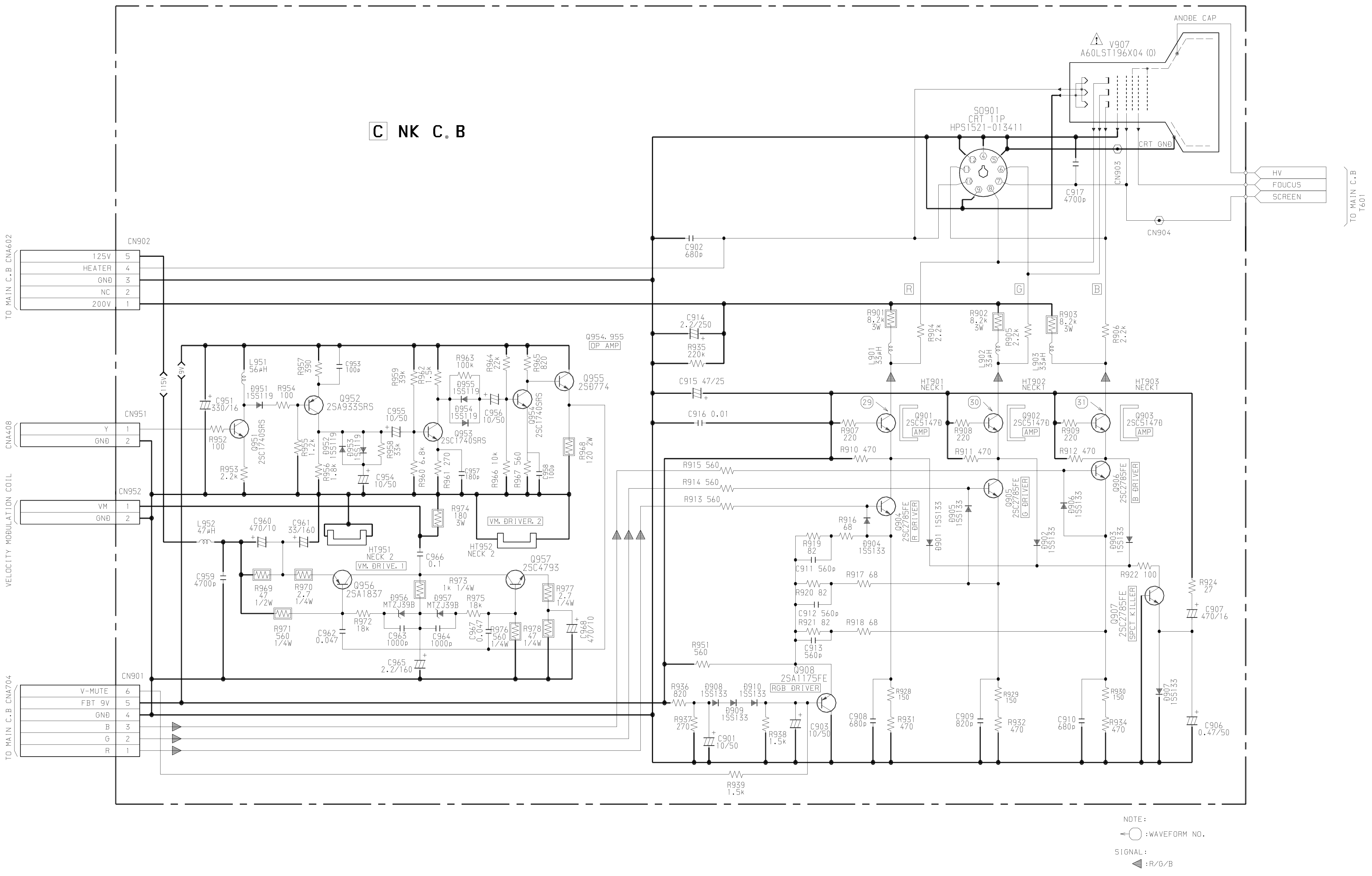
IC401 MM1454XFBE G. SURROUND
Q-SUR
IC404 AN5277 AUDIO POWER AMP
HT404 1BW75L70 (F10)
CN404
SP401 8OHM 15W
SP402 8OHM 15W
SPEAKER
J401 PHONES
IC406 MM1311AD AV SELECTOR
IC402 BA3880FS
IC403 TA7216AN G-BASS BASS/TRE
IC407 TC9014SP DIGITAL COMB FILTER
IC405 NJM78M05FA 5V REGULATOR
CNA402
CNA401
CNA403
CNA408
CNA405
W401
W405
TO A MAIN C.B CN706
TO MAIN C.B CN705
TO MAIN C.B CN701
TO NK C.B CN951
TO MAIN C.B CN702
J402
AUDIO
VIDEO
(MONO)
VIDEO2 IN
S-VIDEO
CN409
TO S-JACK C.B CNA771
CNA414
TO MAIN C.B CN707
SIGNAL:
AUDIO
VIDEO
C
Y
NOTE:
CHECK LAND
WAVEFORM NO.


C NK C.B
V907
A60LST196X04 (0)
ANODE CAP
SO901
CRT 11P
HPS1521-013411
CRT GND
CN903
C917
4700p
HV
FOUCUS
SCREEN
TO MAIN C.B T601
CN904
CN902
TO MAIN C.B CNA602
125V
HEATER
GND
NC
200V
C902
680p
C914
2.2/250
R935
220k
C915 47/25
C916 0.01
Q954, 955
OP AMP
TO AUDIO C.B CNA408
CN951
Y
GND
TO CRT VELOCITY MODULATION COIL
CN952
VM
GND
CN901
TO MAIN C.B CNA704
V-MUTE
FBT 9V
GND
B
G
R
Q952
2SA933SRS
Q953
2SC1740SRS
Q955
2SD774
Q956
2SA1837
Q957
2SC4793
VM. DRIVER. 2
VM. DRIVE. 1
HT951
NECK 2
HT952
NECK 2
Q901
2SC5147D
Q902
2SC5147D
Q903
2SC5147D
AMP
Q904
2SC2785FE
R DRIVER
Q905
2SC2785FE
G DRIVER
Q906
2SC2785FE
B DRIVER
Q907
2SC2785FE
SPCT KILLER
Q908
2SA1175FE
RGB DRIVER
HT901
NECK1
HT902
NECK1
HT903
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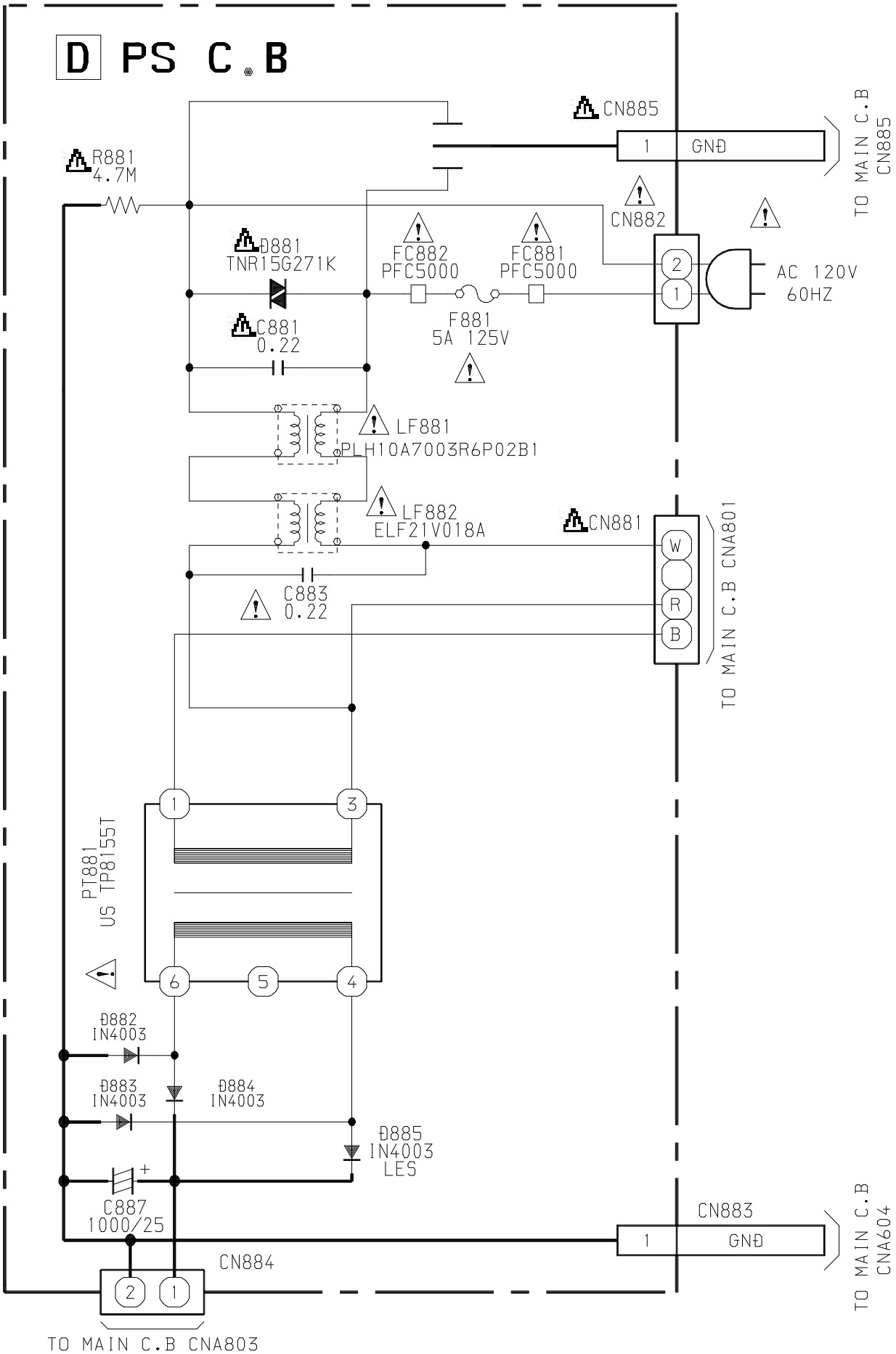
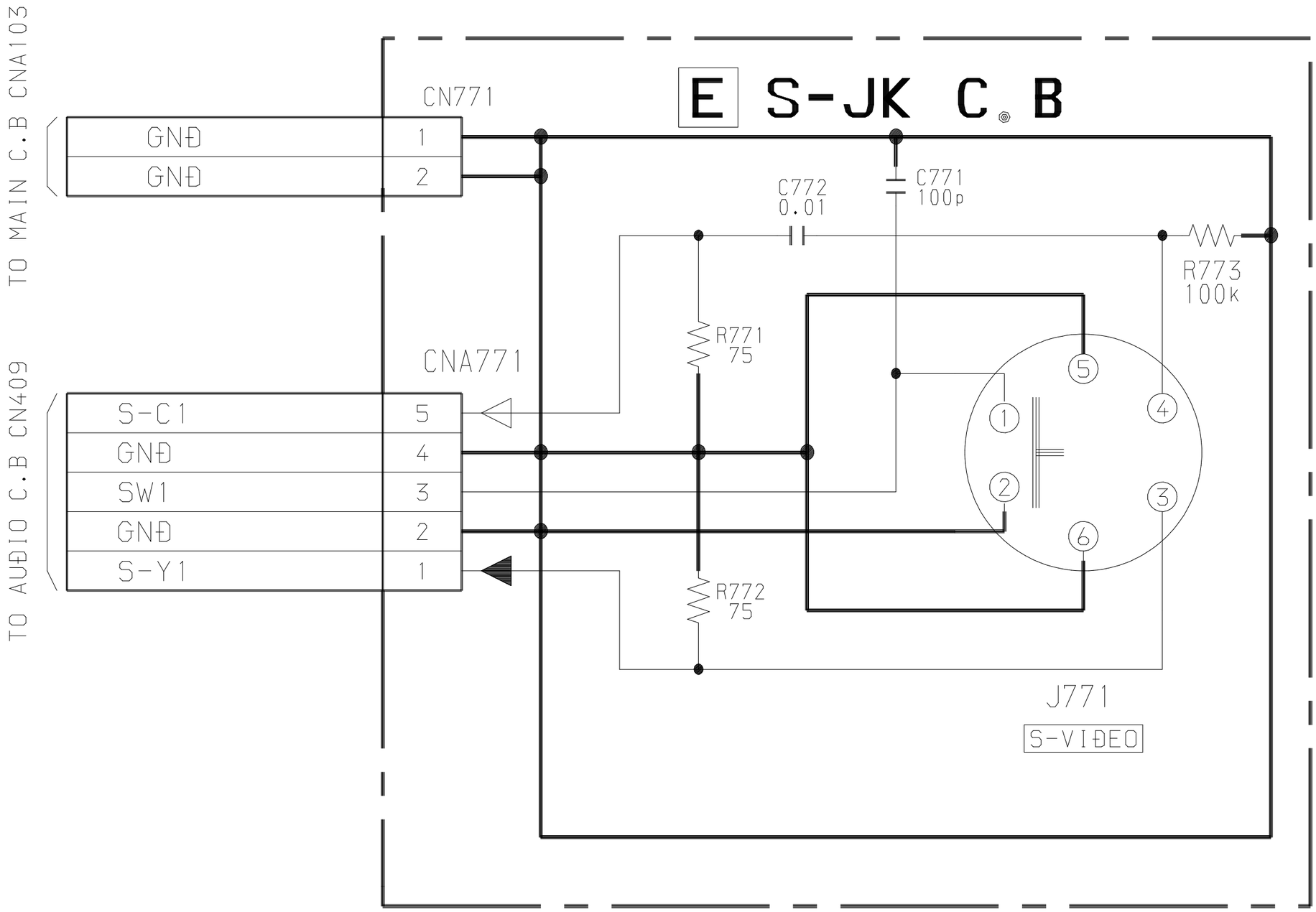
R939
1.5k
NOTE:
:WAVEFORM NO.
SIGNAL:
:R/G/B

SCHEMATIC DIAGRAM – 3 (PS)




E S-JK C.B
CN771
GND 1
GND 2
TO MAIN C.B CNA103
CNA771
S-C1 5
GND 4
SW1 3
GND 2
S-Y1 1
TO AUDIO C.B CN409
C772
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R773
100k
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R772
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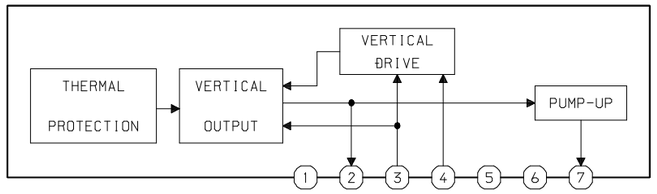
J771
S-VIDEO

IC BLOCK DIAGRAM

IC, LA7833



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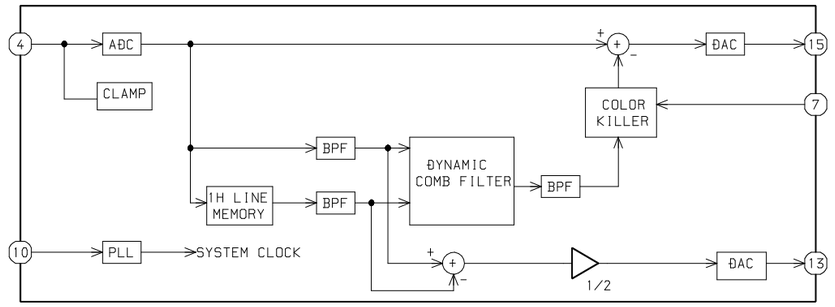

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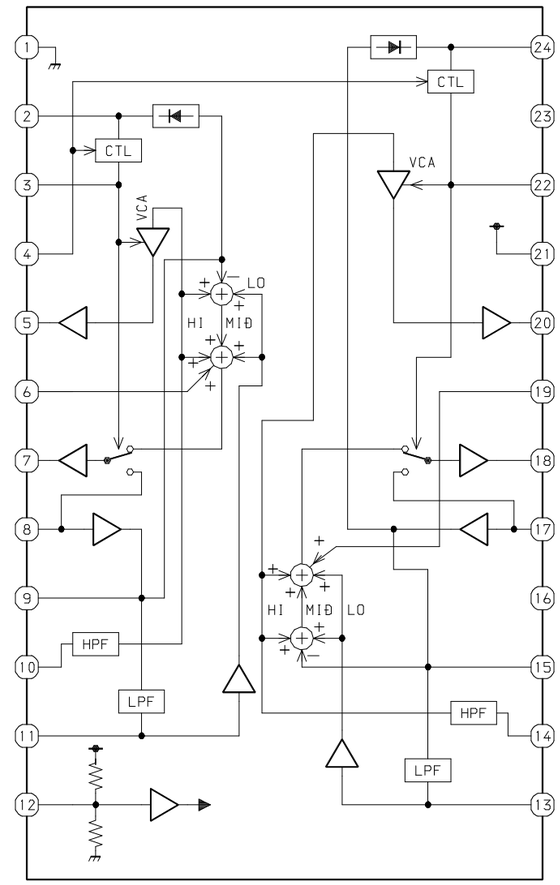
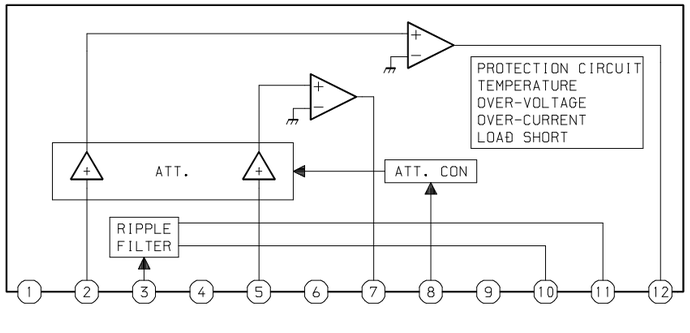
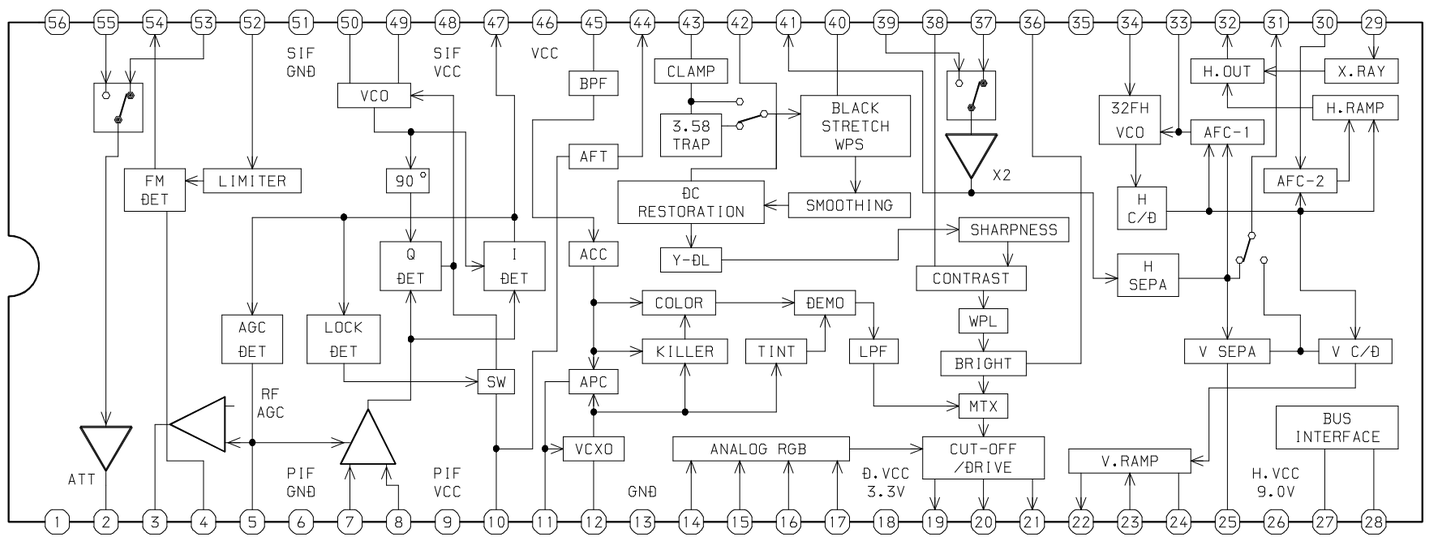


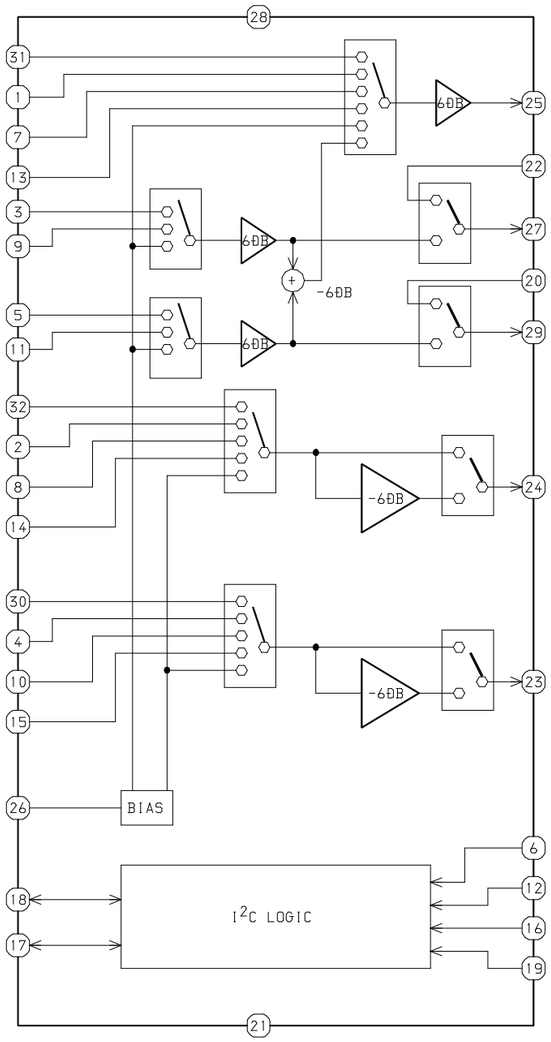
IC, AN5277



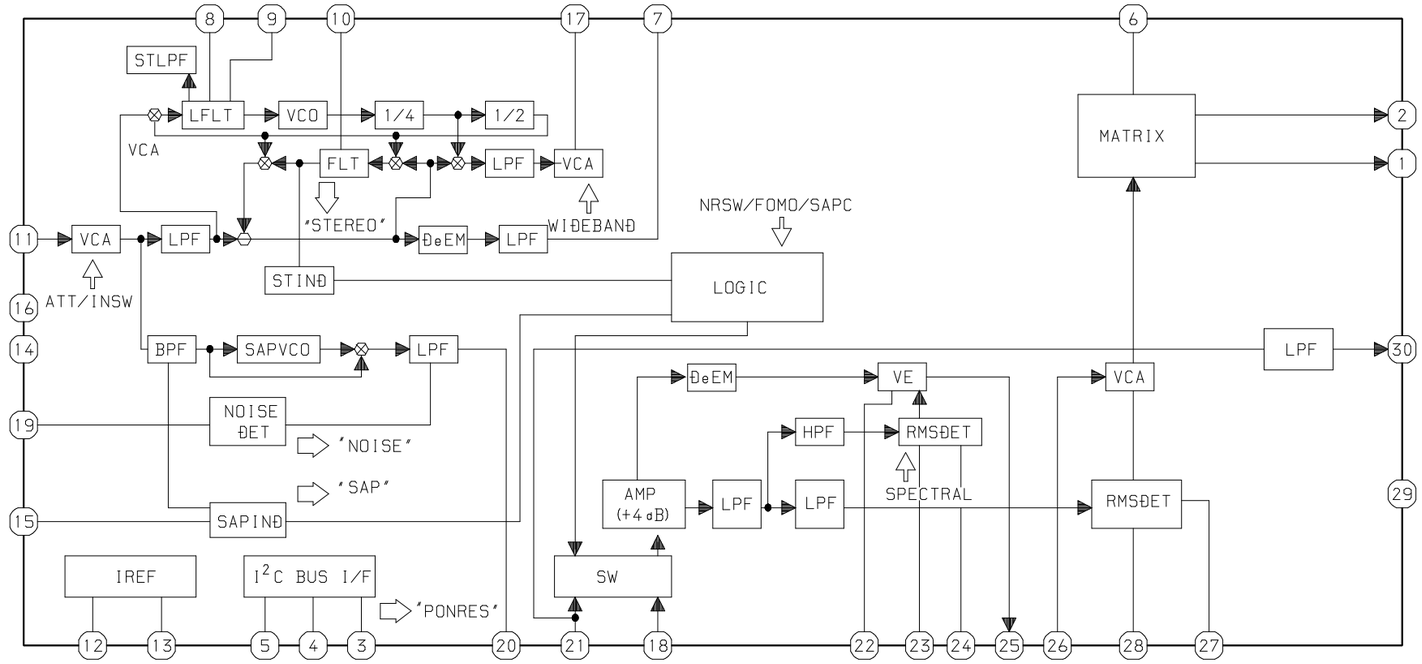
IC, TA1268N



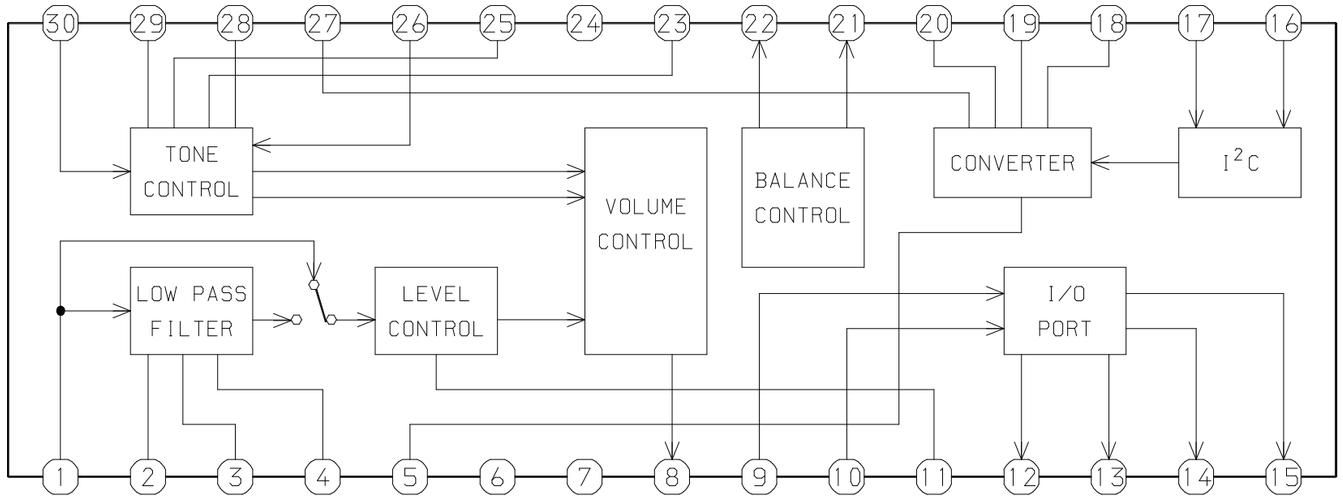
IC, MM1311AÐ



IC, CXA2104S



IC, TA1216AN



IC DESCRIPTION

IC, M37272MA-0525SP

Pin No.	Pin Name	I/O	Description
1	$\overline{\text{BLK H}}$	I	Blanking H sync input.
2	$\overline{\text{BLK V}}$	I	Blanking V sync input.
3	A MUTE	O	Audio Amp mute.
4	L MUTE	O	Audio mute.
5	Q SUR	O	Q surround switch.
6	WP	O	EEPROM Write protect.
7	V MUTE	O	Video mute
8	SEL	O	BPF switch.
9	$\overline{\text{MAIN SW}}$	–	Not used.
10	$\overline{\text{REMOCON}}$	I	Remote control signal input.
11	$\overline{\text{SD}}$	I	Pluse check.
12	$\overline{\text{EXT}}$	I	I^2C switch.
13	PON	O	Power switch.
14	AVCC	–	VCC.
15	HLF	–	Filter Connection Terminal.
16	VHOLD	–	Condenser Connection Terminal.
17	CV IN	I	Complex video signal input
18	VSS	–	GND.
19	XIN	I	Main Clock (8 MHz).
20	XO	O	Main Clock (8 MHz).
21	VSS	–	GND.
22	VCC	–	VCC.
23	OSC2	–	Not used.
24	OSC1	–	Not used.
25	$\overline{\text{RST}}$	I	Reset input.
26	SDOUT	O	Not used.
27	FBT DET	O	FBT detection (over 2.5V).
28	REG DET	I	REG detection (over 2.5V).
29	AFTV	I	AFT voltage input.
30	KEY	I	Key input.
31	SDA2	I	I^2C bus CH2 data (Reg IC).
32	SDA1	I	I^2C bus CH1 data (EEPROM).
33	SCL2	I	I^2C bus CH2 data (Reg IC).
34	SCL1	I	I^2C bus CH1 data (EEPROM).
35	BBE	O	BBE switch.
36	VM MUTE	O	VM mute.
37	$\overline{\text{LED}}$	O	Power LED switch.
38	NC	–	Not connected.
39	FAST BLK	O	OSD Blanking.
40	B	O	OSD B output.
41	G	O	OSD G output.
42	R	O	OSD R output.

VOLTAGE CHART
(POWER ON, COLOR BAR, VOLUME 10)

REF NO.	E	C	B
Q1	0	4.61	0.310

REF NO.	E	C	B
Q2	5.11	-0.42	5.05

REF NO.	E	C	B
Q3	0	4.22	0.042

REF NO.	E	C	B
Q4	0	4.83	0.12

REF NO.	E	C	B
Q5	5.06	0	5.06

REF NO.	E	C	B
Q201	4.48	8.93	5.12

REF NO.	E	C	B
Q202	2.742	8.93	3.327

REF NO.	S	D	G
Q301	-0.342	2.484	0

REF NO.	S	D	G
Q303	2.725	4.88	3.725

REF NO.	E	C	B
Q304	1.871	6.71	2.465

REF NO.	S	D	G
Q305	6.1	9	6.7

REF NO.	E	C	B
Q306	9.01	0.625	8.93

REF NO.	E	C	B
Q307	0	8.93	0.014

REF NO.	E	C	B
Q309	3.668	0	3.042

REF NO.	E	C	B
Q310	0	0.65	0.012

REF NO.	E	C	B
Q311	3.92	0	3.304

REF NO.	E	C	B
Q402	0	5.05	0

REF NO.	E	C	B
Q403	29.78	0	29.76

REF NO.	E	C	B
Q404	12.48	0.088	12.59

REF NO.	E	C	B
Q405	0	0	0.009

REF NO.	E	C	B
Q408	0	8.61	0.008

REF NO.	E	C	B
Q409	1.418	8.22	1.977

REF NO.	E	C	B
Q410	1.654	8.86	2.270

REF NO.	E	C	B
Q411	4.46	8.86	5.11

REF NO.	E	C	B
Q412	2.435	0	1.820

REF NO.	E	C	B
Q413	4.46	8.86	5.10

REF NO.	E	C	B
Q414	8.86	2.897	8.22

REF NO.	E	C	B
Q415	1.32	8.23	1.875

REF NO.	E	C	B
Q416	8.86	3.11	8.22

REF NO.	E	C	B
Q417	2.2535	0	1.896

REF NO.	E	C	B
Q418	3.562	8.86	4.2

REF NO.	E	C	B
Q601	0.004	101.1	0.33

REF NO.	E	C	B
Q602	0.013	120.2	-0.121

REF NO.	E	C	B
Q603	0.003	15.46	0.552

REF NO.	E	C	B
Q604	0	5.11	0

REF NO.	E	C	B
Q605	5.11	0	5.11

REF NO.	E	C	B
Q706	3.807	8.86	4.45

REF NO.	E	C	B
Q751	3.424	8.61	4.059

REF NO.	E	C	B
Q752	3.421	8.62	4.056

REF NO.	E	C	B
Q756	3.358	8.62	3.887

REF NO.	E	C	B
Q801	0	0.082	0.751

REF NO.	E	C	B
Q806	5.11	-0.82	5.09

REF NO.	E	C	B
Q811	123.7	-0.012	123.4

REF NO.	E	C	B
Q901	8.52	142.6	8.98

REF NO.	E	C	B
Q902	8.51	139.7	8.98

REF NO.	E	C	B
Q903	8.51	138.1	8.98

REF NO.	E	C	B
Q904	2.076	8.52	2.44

REF NO.	E	C	B
Q905	2.098	8.51	2.467

REF NO.	E	C	B
Q906	2.142	8.51	2.490

REF NO.	E	C	B
Q907	0.157	8.64	0

REF NO.	E	C	B
Q908	1.316	0	0.609

REF NO.	E	C	B
Q951	1.920	9.01	2.545

REF NO.	E	C	B
Q952	7.68	3.219	8.31

REF NO.	E	C	B
Q953	0.63	5.53	1.273

REF NO.	E	C	B
Q954	2.060	5.96	2.709

REF NO.	E	C	B
Q955	5.34	9.01	5.95

REF NO.	E	C	B
Q956	123	61.8	122.5

REF NO.	E	C	B
Q957	0.188	61.8	0.743

IC1, M37272MA-052SP

PIN NO.	VOLT (V)
1	4.22
2	4.83
3	0.022
4	0.02
5	0.029
6	5.11
7	0.015
8	0.014
9,10	5.09
11	4.61
12	5.09
13	5.01
14	5.06
15	1.978
16	0.336
17	2.328
18	0
19	2.288
20	2.339
21	0
22	5.06
23	5.04
24	5.06
25	5.04
26	5.06
27	0
28	2.481
29	2.48
30	5.11
31	3.83
32	5.06
33	4.15
34	5.06
35	0.009
36	0.01
37,38	5.05
39~42	0.011

IC2, SBX1981-72P

PIN NO.	VOLT (V)
1	5.09
2	5.11
3	0

IC3, S-24CO4BDP-1A

PIN NO.	VOLT (V)
1~4	0
5,6	5.05
7	5.11
8	5.06

IC4, M51943BSL-700A

PIN NO.	VOLT (V)
1	5.06
2	0
3	5.03

IC102, NJM78M05FA

PIN NO.	VOLT (V)
1	5.09
2	0
3	9.02

IC301, TA1268N

PIN NO.	VOLT (V)
1	0.025
2	3.946
3	0.002
4	3.257
5	0.696
6	0
7	1.99
8	1.989
9	8.97
10	4.45
11	6.35
12	4.83
13	0
14	0.008
15,16	4.86
17	4.83
18	3.195
19	2.406
20	2.441
21	2.459
22	0.754
23	4.99
24	5.09
25	6.6
26	9.05
27	4.1
28	3.83
29	2.626
30	1.331
31	1.145
32	1.246
33	7.61
34	6.61
35	0
36	3.112
37	3.263
38	3.993
39	1.812
40	5.22
41	4.07

PIN NO.	VOLT (V)
42	4.77
43	4.71
44	2.476
45	3.921
46	9.03
47	5.13
48	8.93
49,50	7.94
51,52	0
53	3.534
54	3.529
55	2.786
56	0

IC401, MM1454XFBE

PIN NO.	VOLT (V)
1	3.972
2	3.973
3	0.027
4	0.007
5	3.979
6,7	3.984
8	0
9,10	3.981
11	3.98
12,13	3.982
14	4.62
15	3.972
16	8.62

IC402, BA3880FS

PIN NO.	VOLT (V)
1	0
2	4.29
3	6.2
4	8.61
5~15	4.43
16	0
17~20	4.43
21	8.62
22	6.15
23	0
24	4.29

IC403, TA1216AN

PIN NO.	VOLT (V)
1	4.81
2	5.43
3	5.37
4	5.45
5	0.23
6	5.54
7	0
8	3.896
9,10	0.013
11	4.76
12	0.062
13	0.678
14	0.71
15	5.12
16	3.84
17	4.15
18	4.73
19	1.794
20	4.67
21,22	4.17
23	4.84
24	8.62
25	4.83
26	4.82
27	4.67
28	4.84
29	4.83
30	4.82

IC404, AN5277

PIN NO.	VOLT (V)
1~2	0
3	28.47
4~6	0
7	14.34
8	0.622
9	0
10	29.73
11	18.94
12	14.36

IC405, NJM78M05FA

PIN NO.	VOLT (V)
1	5.12
2	0
3	8.86

IC406, MM1311AD

PIN NO.	VOLT (V)
1	4.63
2	4.88
3	4.22
4	4.87
5	4.2
6	8
7	4.22
8	4.87
9	4.22
10	4.87
11	4.2
12	8
13	4.33
14,15	4.88
16	0
17	3.84
18	4.15
19	0.018
20	4.19
21	0
22	5.14
23	4.062
24	4.064
25	5.11
26	4.24
27	4.2
28	8.86
29	3.435
30	4.87
31	4.22
32	4.87

IC407, TC90A45P

PIN NO.	VOLT (V)
1	0
2	2.237
3	2.801
4	2.422
5	1.275
6,7	0
8	5.08
9	0
10	2.162
11	2.033
12	3.424
13	3.092
14	1.546
15	2.945
16	5

IC501, LA7833

PIN NO.	VOLT (V)
1	0
2	16.58
3	27.18
4	0.747
5	0.751
6	26.55
7	2.661

IC601, NJM4558DD

PIN NO.	VOLT (V)
1	26.13
2~4	0.005
5	5.15
6	5.16
7	4.82
8	26.55

IC701, CXA2104S

PIN NO.	VOLT (V)
1,2	4.065
3	3.83
4	4.1
5	0
6	4.051
7	3.877
8	4.046
9	3.837
10	5.15
11	4.045
12	1.254
13	1.254
14	0
15	4.31
16	8.77
17	4.048
18	4.057
19	3.95
20	4
21	4.05
22	3.94
23	4.051
24	1.745
25	4.064
26	4.052
27	1.703
28	3.903
29	-0.013
30	4

IC802, SE120N

PIN NO.	VOLT (V)
1	124.4
2	91.2
3	0

IC803, NJM78M05FA

PIN NO.	VOLT (V)
1	5.11
2	0
3	12.51

IC804, NJM78M09FA

PIN NO.	VOLT (V)
1	8.87
2	0
3	11.77

IC805, NJM7809FA

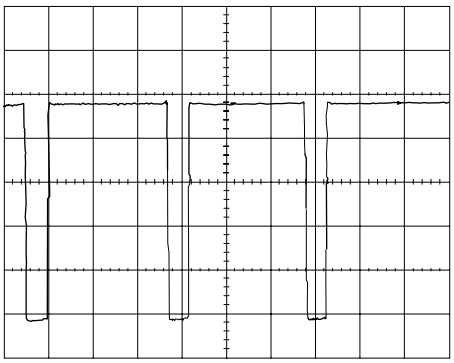
PIN NO.	VOLT (V)
1	9.04
2	0
3	11.77

TU101

PIN NO.	VOLT (V)
1	0
2	9.3
3	4.8
4	4.15
5	3.82
6	0
7	4.8
8	0
9	32.49
10,11	0

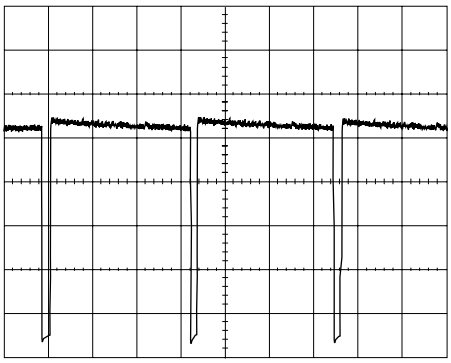
WAVEFORM

① IC1 PIN 1 ($\overline{\text{BLK H}}$)



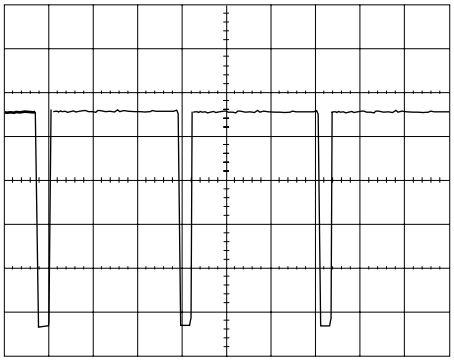
1 V/div
20 µs/div

② IC1 PIN 2 ($\overline{\text{BLK V}}$)



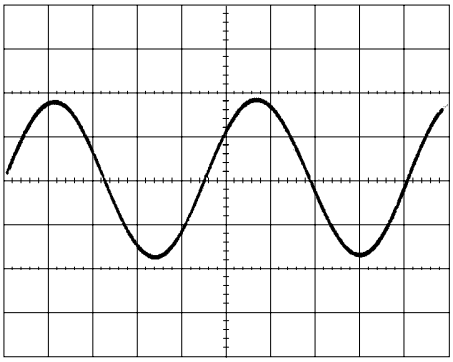
1 V/div
5 ms/div

③ IC1 PIN 11 ($\overline{\text{SD}}$)



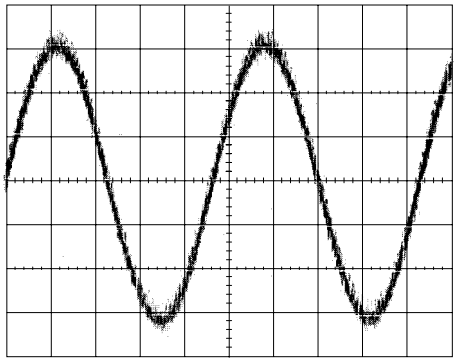
1 V/div
20 µs/div

④ IC701 PIN 2 (TVOUT-L)



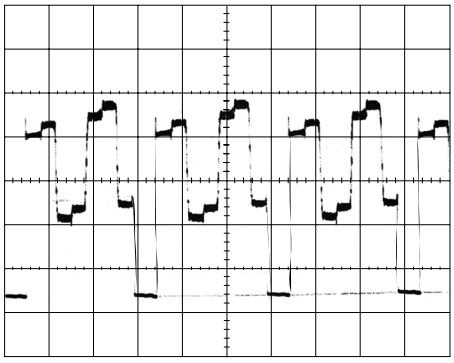
0.1 V/div
0.2 ms/div

⑤ Q202 EMITTER



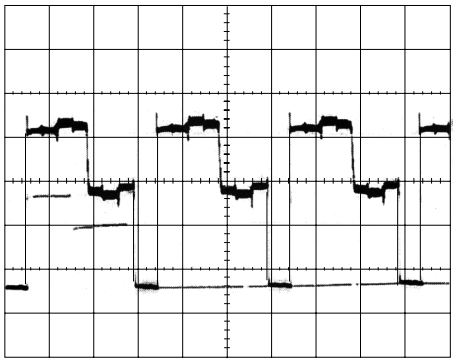
0.1 V/div
0.2 ms/div

⑥ IC301 PIN 19 (R OUT)



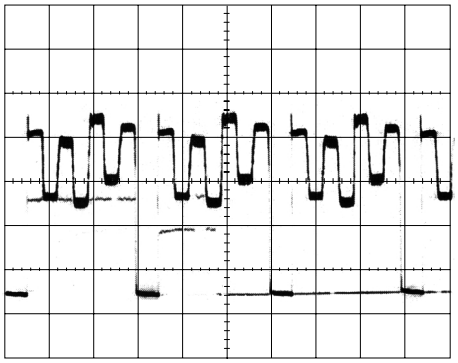
1 V/div
20 µs/div

⑦ IC301 PIN 20 (G OUT)



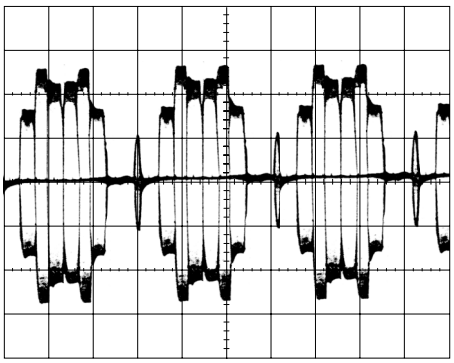
1 V/div
20 µs/div

⑧ IC301 PIN 21 (B OUT)



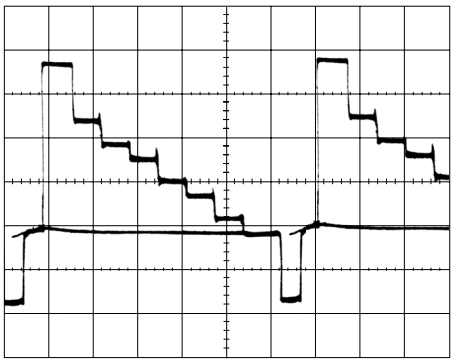
1 V/div
20 µs/div

⑨ IC301 PIN 45 (CHROMA IN)



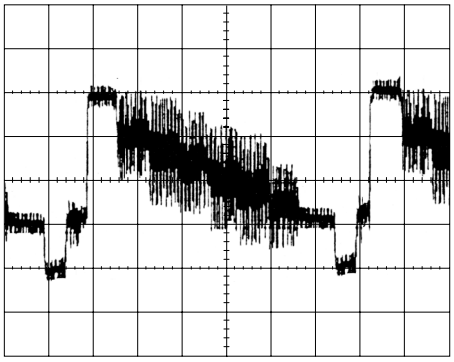
0.1 V/div
20 µs/div

⑩ IC301 PIN 43 (Y IN)



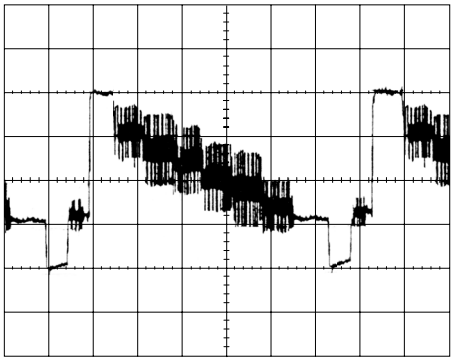
0.2 V/div
10 µs/div

⑪ IC301 PIN 47 (TV DET OUT)



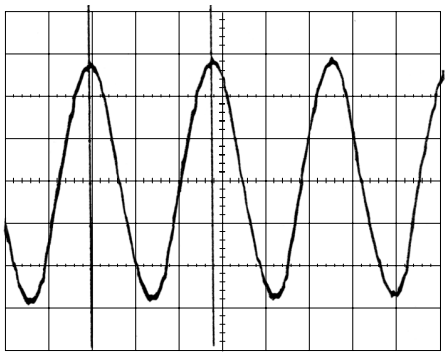
0.5 V/div
10 µs/div

⑫ IC407 PIN 4 (V-IN)



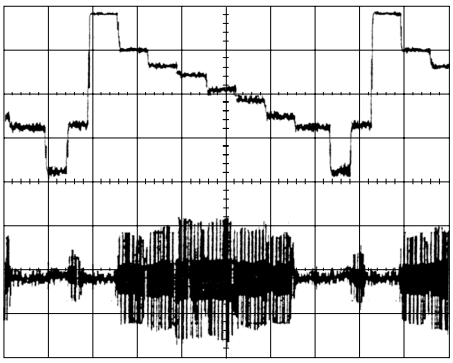
0.2 V/div
10 µs/div

⑬ IC407 PIN 10 (FSC-IN)



0.2 V/div
0.1 µs/div

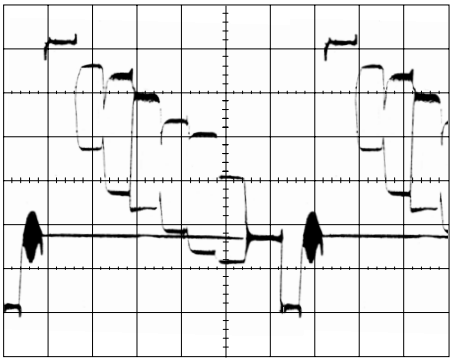
⑭ IC407 PIN 13 (C-OUT)
⑮ IC407 PIN 15 (Y-OUT)



0.5 V/div
10 µs/div

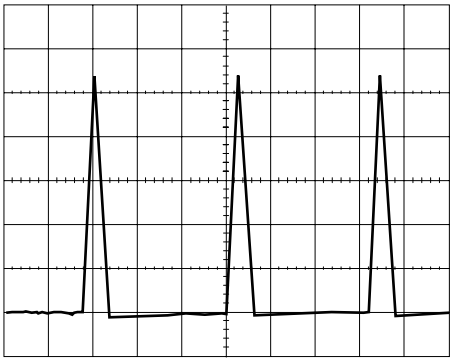
0.2 V/div
10 µs/div

⑯ Q309 EMITTER



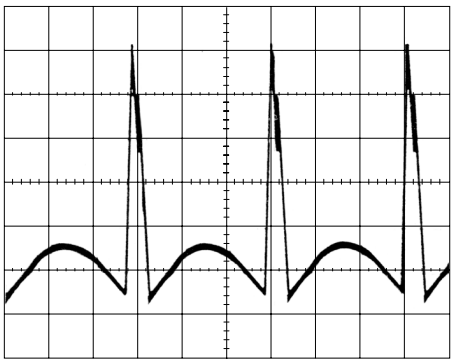
0.2 V/div
10 µs/div

⑰ CN601 PIN 1 (H+)



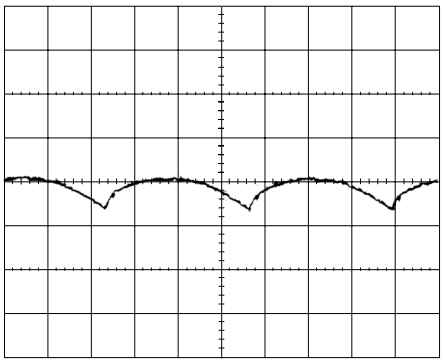
200 V/div
20 µs/div

⑱ CN601 PIN 2 (H-)



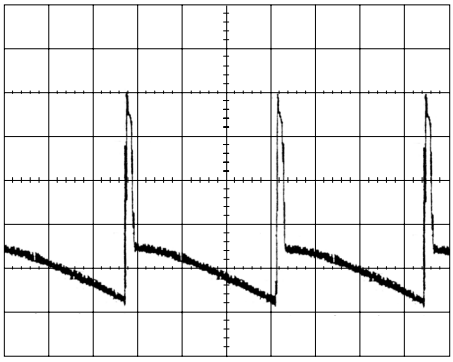
50 V/div
20 µs/div

⑲ CN601 PIN 4 (V-)



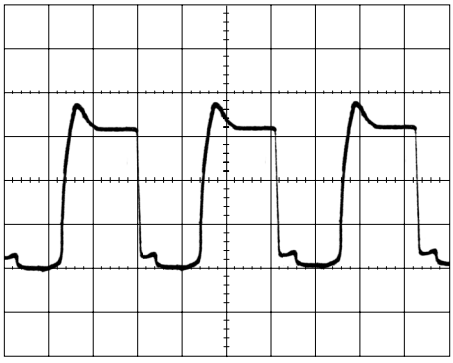
5 V/div
5 ms/div

⑳ CN601 PIN 5 (V+)



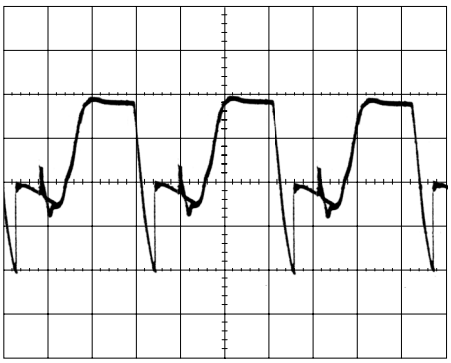
10 V/div
5 ms/div

㉑ Q601 COLLECTOR



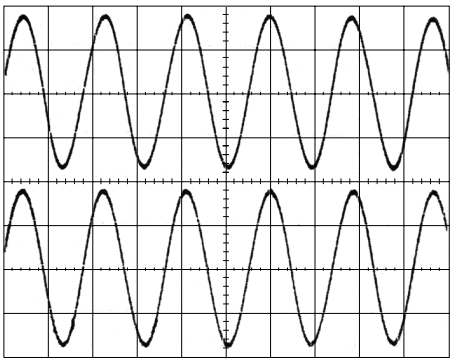
50 V/div
20 µs/div

㉒ T602 PIN 3



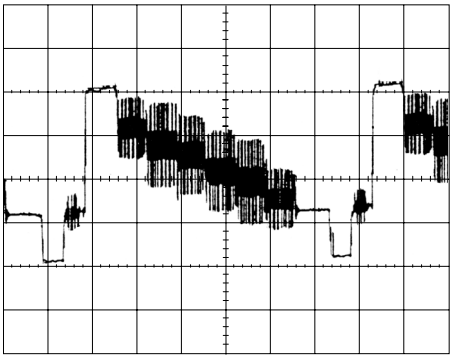
20 V/div
20 µs/div

㉓ Q751 (EMITTER)
㉔ Q752 (EMITTER)



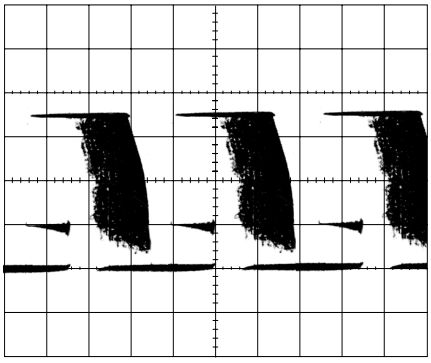
0.2 V/div
0.5 ms/div

㉕ J702 (VIDEO OUTPUT)



0.5 V/div
10 µs/div

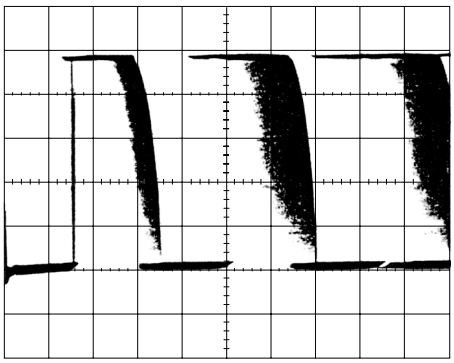
㉖ D823 ANODE (at POWER ON)



10 V/div
5 µs/div

㉗ D827 ANODE (at POWER ON)

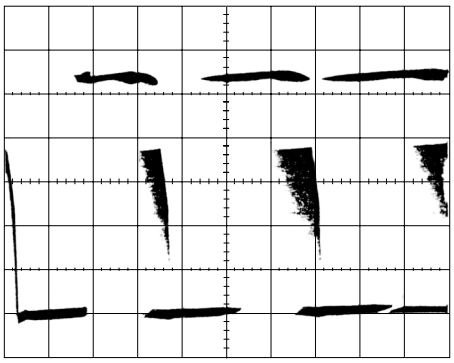
㉗



50 V/div
5 µs/div

㉘ D822 ANODE (at POWER ON)

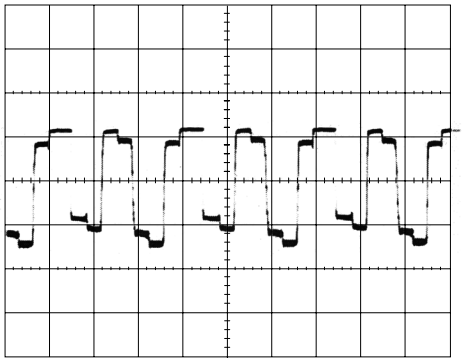
㉘



5 V/div
5 µs/div

㉙ Q901 COLLECTOR (R-DRIVE)

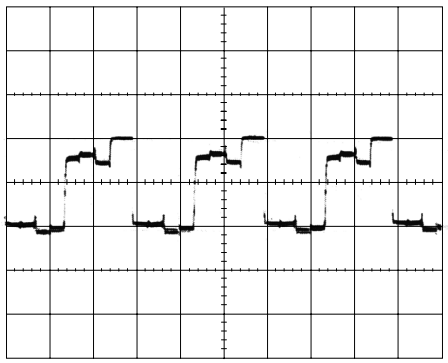
㉙



50 V/div
20 µs/div

㉚ Q902 COLLECTOR (G-DRIVE)

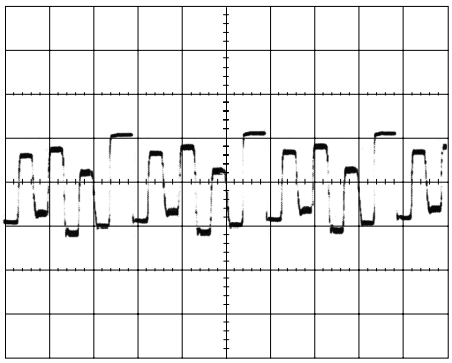
㉚



50 V/div
20 µs/div

㉛ Q903 COLLECTOR (B-DRIVE)

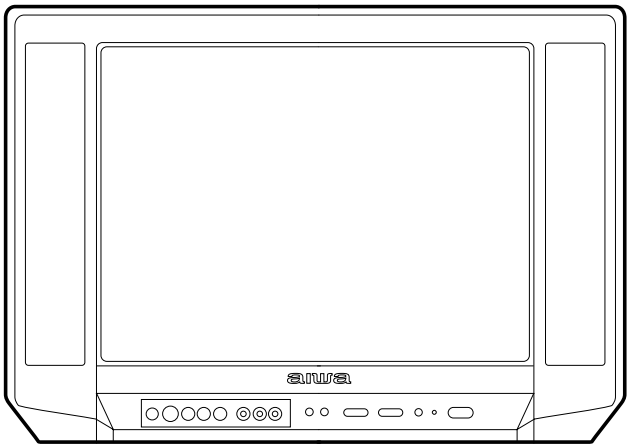
㉛



50 V/div
20 µs/div

aiwa SERVICE

TV-F2400 U
TV-F2500 NH,HT



SERVICE MANUAL

COLOR TELEVISION

- This Service Manual contains the additional information "NOTE ON BEFORE REPAIRING", "SETTING OF IIC BUS DATA" and "ADJUSTMENT" for the model TV-F2400/2500(U,NH,HT). If requiring the other information, see Service Manual of TV-F2400(U),(S/M Code No. 09-007-431-9R1) and TV-F2500(NH,HT), (S/M Code No. 09-008-431-9R2).

aiwa

S/M Code No. 09-009-431-9S2

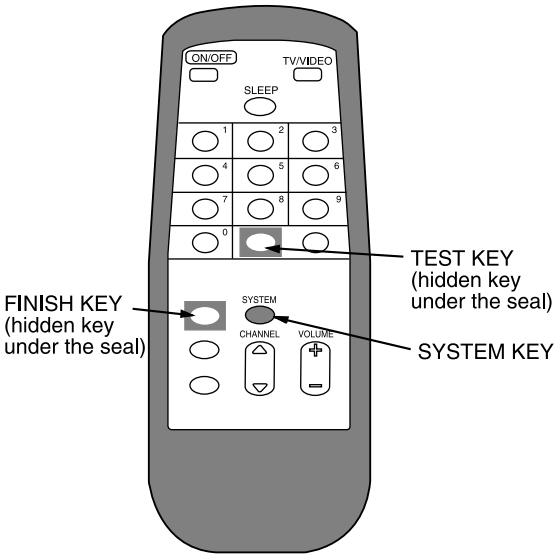
SUPPLEMENT DATA

Setting of IIC BUS Data

This model is designed with the ability to adjust most parts of the image projection and deflection system by using the jig remote controller.

Preparations :

- Modify the hidden keys on the RC-6VT06 jig remote controller (TV-C142/86-LB4-951-010) so that they can easily be pressed.
  2 keys to be modified. (Refer to the below illustration)



Aging Mode Operation Method :

Make sure that confirmation is done after replacing the EEP ROM.

<TV-F2400>

1. Enter to the aging mode by pressing the “TEST” key on the remote controller. (Fig. 1a)

2. Press “SYSTEM” key and confirm the condition of the distinction switch. (Fig. 2a)
   Confirm the following items before doing the electrical adjustment.
   - In case the contents are different, press “5” key and select [US25] for the destination.
   - In case the data is different use the “CHANNEL” key to scroll through 0~F and set to the correct data value of “0” or “1” by the volume key.
   - All the settings are stored when the “TEST” key is pressed to complete the correction.

<TV-F2500>

1. Enter to the aging mode by pressing the “TEST” key on the remote controller. (Fig. 1b)

2. Press “SYSTEM” key and confirm the condition of the distinction switch. (Fig. 2b)
   Confirm the following items before doing the electrical adjustment.
   - In case the contents are different, press “4” key and select [NH25] for the destination.
   - In case the data is different use the “CHANNEL” key to scroll through 0~F and set to the correct data value of “0” or “1” by the volume key.
   - All the settings are stored when the “TEST” key is pressed to complete the correction.

Starting the “Service Mode” :

Hidden key / “TEST”

- Press the “TEST” key on the jig remote controller once to enter to the “Aging Mode” (Refer Fig. 1).
- Press the “TEST” key on the jig remote controller again to enter the “Adjustment Mode”.

Hidden key / “FINISH”

- The accumulated hours in the “Aging Mode” will be reset by pressing the “FINISH” key on the jig remote controller.
- Avoid to press this key during general repairs.

```
AGING  AFT  OK  0000H US25
```

Fig.1a

```
AGING  AFT  OK  0000H NH25
```

Fig.1b

```
1   US21
2   TW21
3   NH21
4   NH25
5   US25
6   TW25
    0 1 2 3 4 5 6 7 8 9 A B C D E F
    0 1 1 1 0 1 1 1 1 1 1 1 1 1 0 0
```

Fig.2a

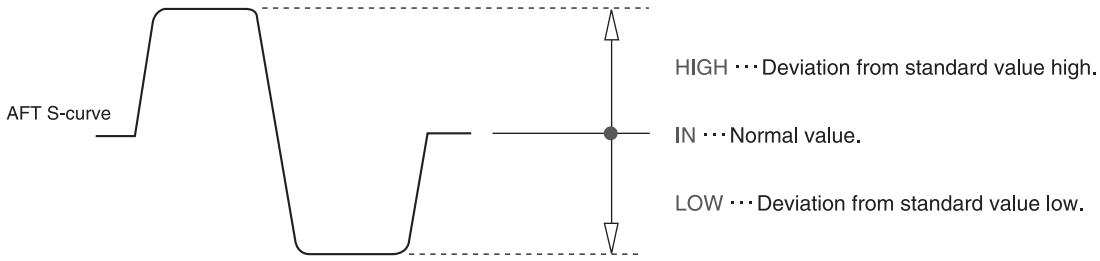
```
1   US21
2   TW21
3   NH21
4   NH25
5   US25
6   TW25
    0 1 2 3 4 5 6 7 8 9 A B C D E F
    0 1 1 1 0 1 1 1 1 1 1 0 1 1 0 0
```

Fig.2b

Contents of Aging Mode :

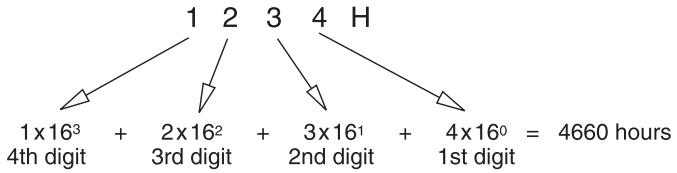
1. Release “Auto Power Off” function
   Release “Auto Power Off” function when no input is supplied.
   Use this mode for warming up (aging) during CRT adjustment.

2. AFT S-curve status indication
   The condition of FT S-curves are indicated by “OK” for suitable tuning, “UP” for too high or “DN” for too low.



3. Display of “CRT ON” accumulated hours
   The CRT usage time is accumulated on an hourly basis and is displayed in hexadecimal figures.

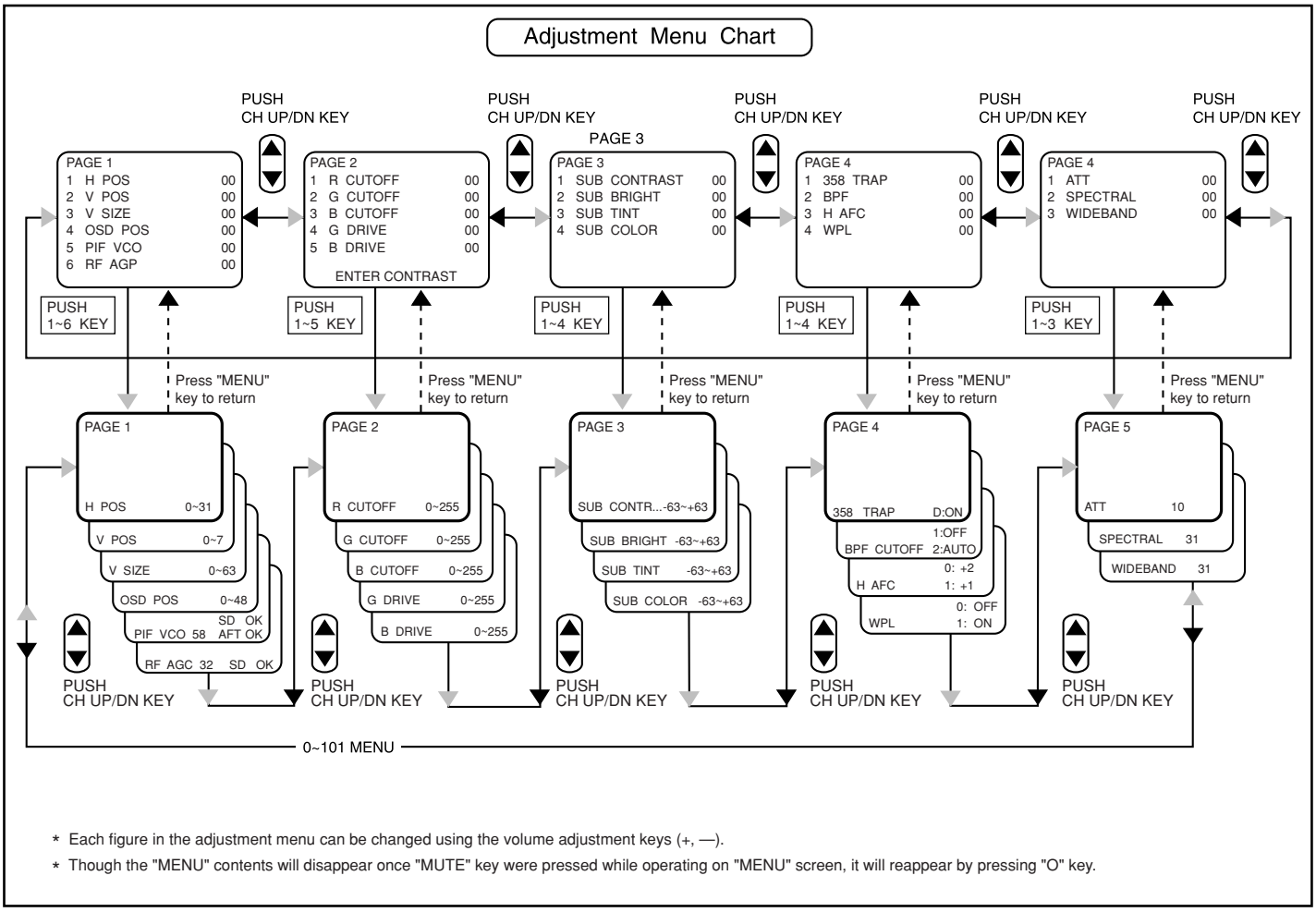
   Sample calculation of displayed hexadecimal figures: AFT OK 1234 H US25



   • The display will be reset to 0000H when the accumulated hours exceed 7FFFH(32768 hours).

Adjustment Mode Operation Method :

1. Return to the aging display by pressing the “SYSTEM” key and press “TEST” key to display the adjustment menu screen.



* Each figure in the adjustment menu can be changed using the volume adjustment keys (+, —).
* Though the "MENU" contents will disappear once "MUTE" key were pressed while operating on "MENU" screen, it will reappear by pressing "O" key.

Fig.3

ADJUSTMENT

Electrical adjustment:

- Operate after inputting the following initial figures when replacing EEP ROM.
- Check the condition and adjust the area where the general repair is carried out.

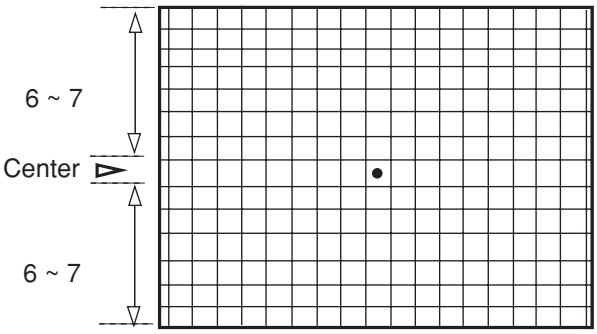
	Initial Value
PAGE 1	
1. H POS	16
2. V POS	3
3. V SIZE	30
4. OSD POS	6
5. PIF VCO	58
6. RF AGC	32
PAGE 2	
1. R CUT OFF	127
2. G CUT OFF	127
3. B CUT OFF	127
4. G DRIVE	127
5. B DRIVE	127
PAGE 3	
1. SUB CONTRAST	– 5
2. SUB BRIGHT	+ 32
3. SUB TINT	+ 16
4. SUB COLOR	+ 16
PAGE 4	Specific Value
1. 3.58 TRAP	OFF
2. BPF	AUTO
3. H AFC	+ 1
4. WPL	OFF
PAGE 5	
1. ATT	10
2. SPECTRAL	24
3. WIDEBAND	44

PWB Adjustment / Do before entering the adjustment mode

1. H SIZE Horizontal Size Crosshatch

   Input Signal : Crosshatch
   Adjustment Point : SFR601
   Measuring Instrument : Pattern generator / reader: LCG-401

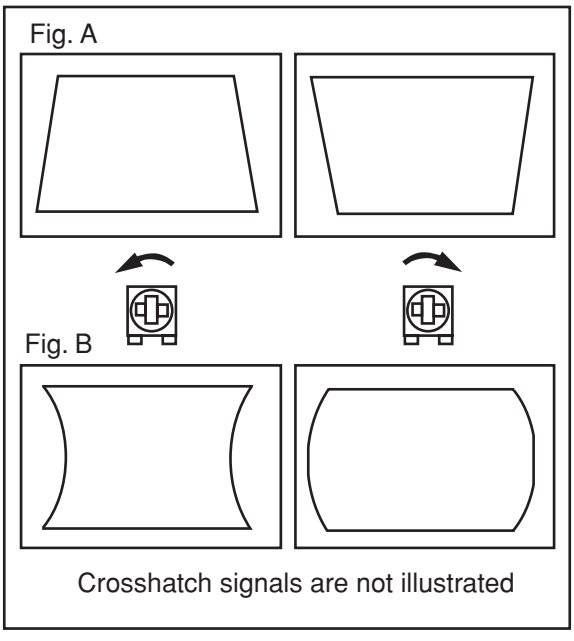
   - Use SFR601 to adjust the dot mark of the crosshatch to the center.
     (So that the number of measure become the same horizontally and vertically)



2. PIN & BARREL Pin Phase & Pin Amplitude (Barrel) Adjustment (Linearity).

   Input Signal : Crosshatch
   Adjustment Point : SFR602 / PIN (Fig. A)
   SFR603 / BARREL (Fig. B)
   Measuring Instrument : Pattern generator / reader: LCG-401

   - Adjust the crosshatch distortion.
     1. Use SFR602 to adjust the vertical distortion (Fig. A).
     2. Use SFR603 to adjust the horizontal distortion (Fig. B).
   - Repeat 1~2 until the vertical lines become straight.



PAGE 1

1-1. H POS Horizontal Positioning Adjustment / Adjustment Menu Screen: PAGE 1-1

Input Signal : Crosshatch
Measuring Instrument : Pattern generator / reader: LCG-401

- Use the volume keys on the jig remote controller to adjust the dot mark in the centre of crosshatch screen to the exact centering position by allocating an equal number of squares on the left and right side of the dot. (Fig. 1-1)

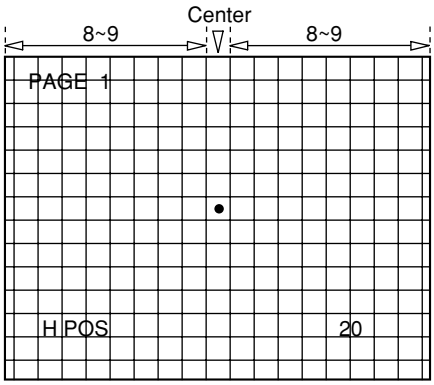


Fig. 1-1

1-2. V POS Vertical Positioning Adjustment / Adjustment Menu Screen: PAGE 1-2

Input Signal : Crosshatch
Measuring Instrument : Pattern generator / reader : LCG-404

- Using the volume keys on the jig remote controller to adjust the dot mark to the exact vertical centre position in the crosshatch screen. (Fig. 1-2)

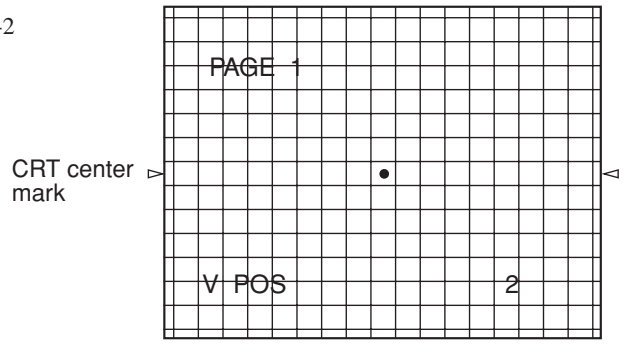


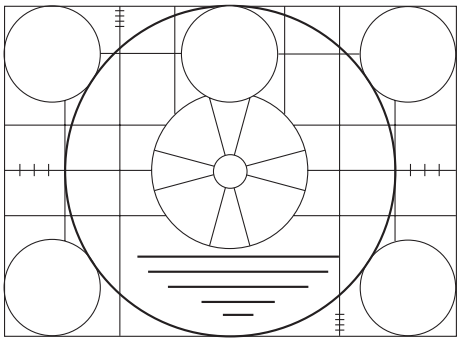
Fig. 1-2

V LINEARITY Vertical Linearity Adjustment

Input Signal : Monoscope (LION MARK)
Measuring Instrument : Monoscope / NTSC

Use the volume key on the jig remote controller to adjust the 6 circular figures on monoscope to be true circles.

<Simple Adjustment>
Input Signal : Crosshatch
Adjustment Location : SFR501
Measuring Instrucment : Pattern generator / NTSC
Adjust SFR501 so that the crosshatch patterns is square.



∗ Adjust V POS (PAGE 1-2) and Linearity repeatedly. If it does not work, adjust V Size (PAGE 1-3) first and try the adjustment again.

1-3 V SIZE Vertical Size Adjustment / Adjustment Menu Screen : PAGE 1-3

Input Signal : Crosshatch
Measuring Instrument : Pattern generator / reader : LCG-401

- Use the volume keys on the jig remote controller to adjust the number of the squares of the crosshatch pattern to 13~14. (Fig. 1-3)

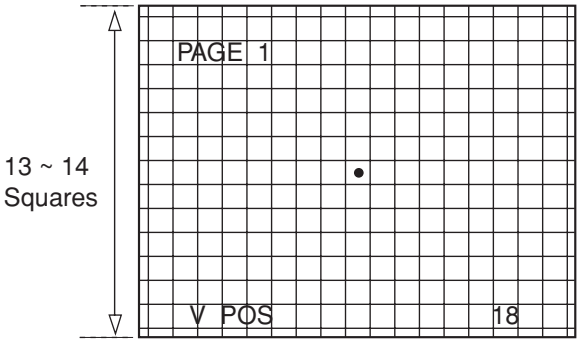


Fig. 1-3

1-4. OSD POS OSD Positioning Adjustment / Adjustment Menu Screen: PAGE 1-4

Input Signal: Not specified.

- Use the volume keys on the jig remote controller to adjust the position of the + sign on both right and left sides shown on the OSD screen to be equivalent from the screen edge. A=B Fig. 1-4

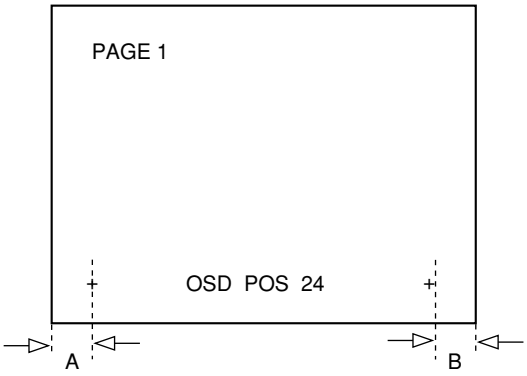


Fig. 1-4

1-5. PIF VCO Video IF/ VCO Adjustment / Adjustment Menu Screen: PAGE 1-5

Input Signal: ANT RF-INPUT
Colour Bar
Measuring Instrument: Oscilloscope Pattern generator / reader: LCG-401

- Use the volume keys on the jig remote controller to adjust the status of AFT on the screen to "OK". Fig. 1-5
- If "OK" status can be obtained from multiple numbers of ranges, select the intermediate value.

* SD will display "NG" while the screen has no signals. There will be no problem with VCO Adjustment. (e.g. when there is no signal with Video input) In this case, it is possible to make adjustments as long as ANT is loaded.

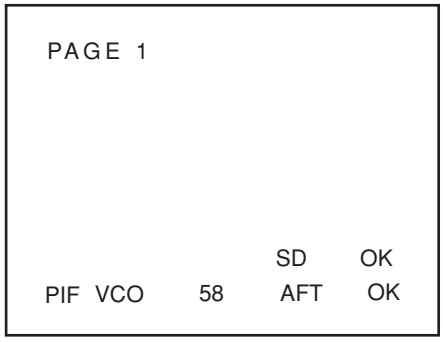


Fig. 1-5

1-6. RF AGC RF-AGC/ Adjustment Menu Screen: PAGE1-6

Input Signal: ANT RF-INPUT
Color Bar
Test Point: TP101 RF AGC
Measuring Instrument: Oscilloscope
Pattern generator / reader: LCG-401

1. Connect the oscilloscope to TP101.
2. Using the volume keys on the jig remote controller to adjust the test point voltage value to 4.0 ± 0.5VDC. Then check if the status of AFT on the Adjustment Menu Screen is displayed "OK" as shown in Fig. 1-6.

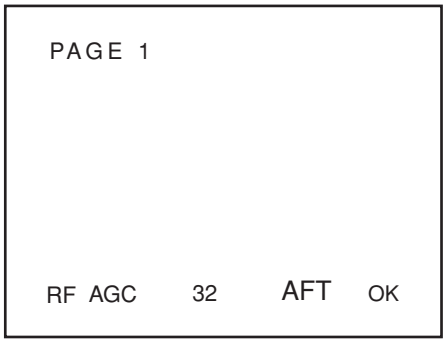


Fig. 1-6

PAGE 2

White Balance Adjustment : Adjustment Menu Screen: PAGE 2-1~5

*User's picture quality will be cleared when the adjustment menu screen appears.
Input signal : White raster
Contents of Adjustment :

1. R CUT OFF
2. G CUT OFF
3. B CUT OFF
4. G DRIVE
5. B DRIVE

* More than 20 minutes of aging is required before the adjustment.
* The whole process should be repeated several times for the adjustment.

Measuring instrument : Pattern generator / reader: LCG-401

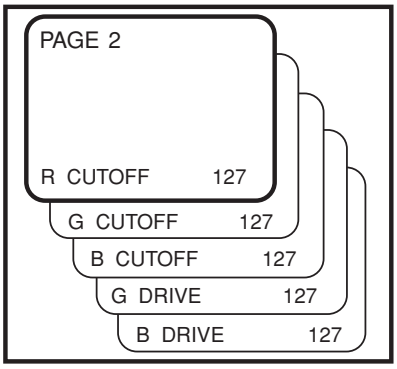


Fig. 2-1

Cut Off Adjustment :

2-1. Use the pattern generator to input the white raster signal.
2-2. Using the volume keys on the jig remote controller, fix the figure of the strongest color on the screen to 127 and adjust the other 2 cut off figures until white picture appears on the screen.

Drive Adjustment :

2-3. Using the volume keys on the jig remote controller, bring the figure of the 4.G DRIVE up to more than 200 till the color becomes greenish.
2-4. Then reduce the numeric figure to the point where the greenish color disappears completely.
2-5. Using the volume keys on the jig remote controller, bring the figure of the 5.B DRIVE up to more than 200 till the color becomes bluish.
2-6. Then reduce the numeric figure to the point where the bluish color disappears completely.
2-7. Repeat the process of 1~6 for several times and adjust for whiter look.

Focus Adjustment :

Input Signal : Dot pattern
Adjustment Point : SFR located at upper part of FBT (T601)
Measuring Instrument : Pattern generator / reader: LCG-401

- Adjust SFR which is located at upper part of FBT (T601) in order to get the best focus for the dot.

Screen Adjustment :

Input Signal : No Signal (No Raster)
Adjustment Point : SFR located at lower part of FBT (T601)
Measuring Instrument : Pattern generator / reader: LCG-401

Fig. 2-2

1. Enter to " Aging Mode Screen" by pressing " TEST" key on the jig remote controller once.
2. Press "10" key of the numeric channal keypad to get a horizontal single line screen (Fig.2-2).
3. Adjust SFR located at lower part of FBT (T601) until the horizontal line starts to be slightly brightened.
4. Repeat the process of step 2 and return to the "Adjustment Menu Screen".

PAGE 3

3-1. SUB BRIGHT Sub-brightness Adjustment / Adjustment Menu Screen: PAGE3-2 (careful with the order)

Input Signal: Color Bar (Stair step)
Measuring Instrument: Pattern generator / reader: LCG-401

- Using the volume keys on the jig remote controller to adjust the scale of the second last from right to be slightly brightened.

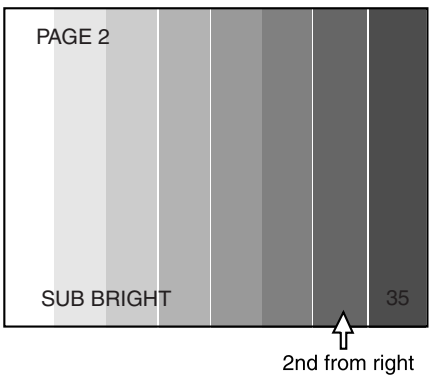


Fig. 3-1

3-2. SUB CONTRAST Sub-contrast Adjustment / Adjustment Menu Screen: PAGE 3-1

Input Signal: Color Bar (QIW)
croma/OFF
Measuring Instrument: Oscilloscope Pattern generator / reader:

Test Point: S0901 R(R CATHODE)

1. Connect the oscilloscope to S0901 R.
2. Using the volume keys on the jig remote controller adjust the pedestal level and the voltage of 100% white to 105 ± 2.0V, according to Fig. 3-2.

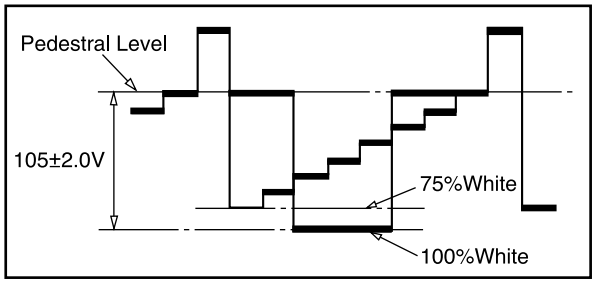


Fig. 3-2

3-3. SUB TINT Sub-Tint Adjustment / Adjustment Menu Screen: PAGE 3-3

Input Signal: Color Bar (VIDEO IN)
Measuring Instrument: Oscilloscope / Pattern generator / reader:
LCG4-1
Test Point: CNA704 ③ PIN B

1. Connect the oscilloscope to CNA704 ③ PIN B.
2. Using the volume keys on the jig remote controller, a djust the top excursions of waveform “Magenta” and “Blue” to be linear (Fig. 3-3).

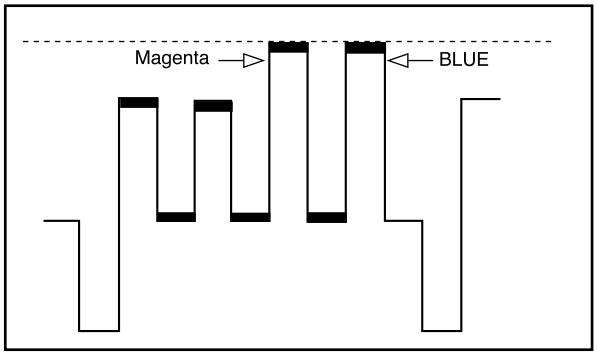


Fig. 3-3

3-4. SUB COLOR Sub-color Adjustment / Adjustment Menu Screen: PAGE3-4

Input Signal: Color Bar (VIDEO IN)
Measuring Instrument: Oscilloscope / Pattern generator / reader:
LCG-401
Test Point: CNA704 ③ PIN B

1. Connect the oscilloscope to CNA704 ③ PIN B.
2. Using the volume keys on the jig remote controller, adjust the top excursions of waveform to be linear (Fig. 3-4).

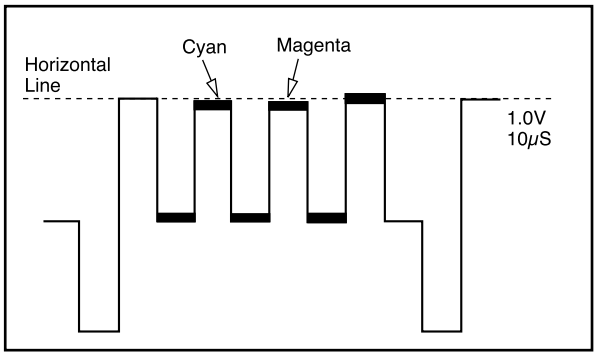


Fig. 3-4

PAGE 4

4. TV SETTING CHECK Confirmation of Model Setting / Adjustment Menu Screen: PAGE4-1~4

Each setting is particular to each model. Do not make any changes to these fixed setting.

- Check if the details of the Adjustment Menu Screen are the same as those in Fig. 4. If they were different, readjust them accordingly using the volume keys on the jig remote controller.

3.58 TRAP	0 : ON
BPF	2 : AUTO
H AFC	1 : +1
WPL	0 : OFF

* The details of 3.58 TRAP cannot be controlled.

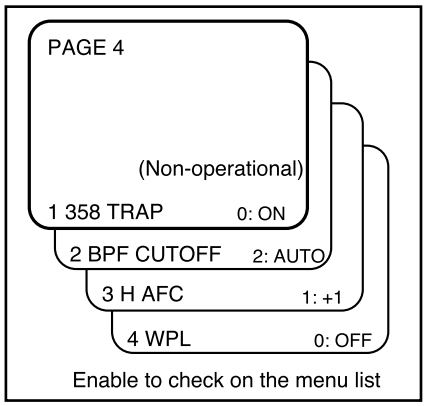


Fig. 4

PAGE 5

5-1. ATT ALIGNMENT ATT Adjustment / Adjustment Menu Screen: PAGE 5-1

Input Signal: ANT RF-INPUT / Color Bar
Measuring Instrument: Oscilloscope / Pattern generator / reader: LCG-401
Test Point: IC701 ② PIN TV OUT-L

1. Connect the oscilloscope to IC701 ② PIN
2. Using the volume keys on the jig remote controller, adjust the value of IC701 ② PIN to 490 ± 20mVrms.

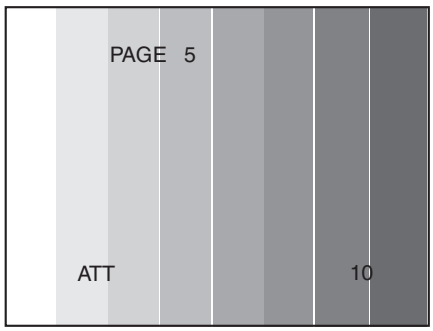


Fig. 5-1

5-2. SEPARATION ALIGNMENT Adjustment of Stereo Sound Separation Degree/Adjustment Menu Screen: PAGE 5-2~3

Input Signal: Setting of TV Multiplex Transmission Signaler

Variation	Internal
Internal Variation	400 Hz
Audio	L ch
Channel	2 ch
Video Signal	Color Bar

Multiplex Transmission Signaler RF Output / 2CH

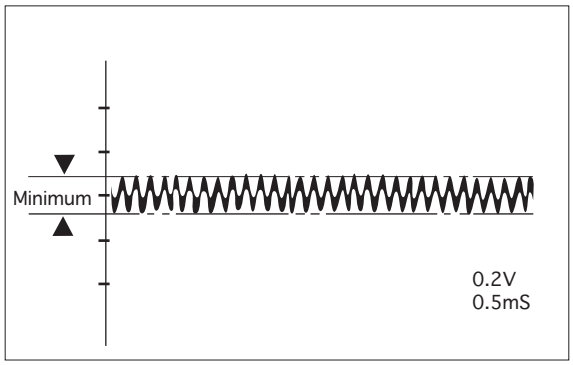


Fig. 5-2

Measuring Instrument: Oscilloscope / TV Multiplex Transmission Signaler / reader: 236A
Test Point: IC701 ① PIN TV OUT-R

1. Connect the oscilloscope to IC701 ① PIN
2. Start receiving signals from TV 2CH.
3. PAGE5-3

Using the volume keys on the jig remote controller, adjust the voltage width of IC701 ① PIN waveform to the minimum as in Fig 5-3.

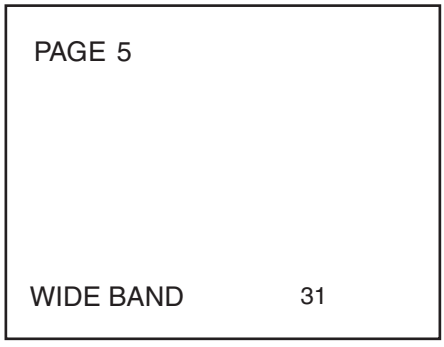


Fig. 5-3

4. Adjust the internal Variation of TV Multiplex Transmission Signaler to 1kHz and perfrom the same method as in step 3. (Fig 5-4)
5. Repeat the step 3~4 for several times to adjust for the minimum value.

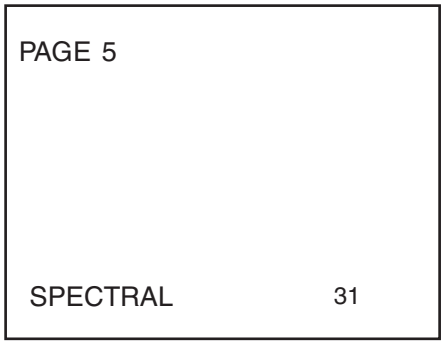


Fig. 5-4

TUNER ADJUSTMENT

If adjustment elements were replaced for repair, conduct the following set of adjustments. And then, further adjustments should be conducted on the Adjustment Menu Screen.
If this set of adjustments was not completed, no further adjustments on the Adjustment Menu Screen can be conducted.

The elements whose circuit condition will be altered depending on repair.
• VCO coil
• SIF coil

6-1. VCO ADJUSTMENT VCO (PIF) Adjustment / Video Transfer Frequency Free-Running Adjustment

Input Signal: RF-Color Bar
Input Level: 90dBμ V
BROADCAST CH/fc=45.75MHz
MODE: TUNER
Test Point: IN-PUT / TU101-11PIN IF
OUT-PUT / IC301-44PIN AFT
Measuring Location: L205/P-IF
Measuring Instrument: Oscilloscope / Pattern generator / reader: LCG401

1. Connect the oscilloscope to IC301-44PIN.
2. Enter the specific level of RF signal to TU101-11PIN, and adjust L205 so that the voltage of IC301-44PIN will be 2.8±0.2VDC.

6-2. SIF ADJUSTMENT Audio IF Variation Adjustment

Input Signal: AM/FM-SG RF OUT/4.5MHz-SIF
MOD OFF
90dB μV

• The simple way to make adjustment is to receive a normal broadcasting.

MODE: TUNER
Test Point: IN-PUT/IC301-52PIN SIF
OUT-PUT/IC301-54PIN FM DET
Measuring Location: L201/S-IF
Measuring Instrument: Oscilloscope
Am/FM-Signal Generator

1. Connect the oscilloscope to IC301-54PIN.
2. Enter the specific signal to IC301-52PIN, and adjust L201 so that the voltage of IC301-54PIN will be 4.5 ± 0.2VDC.

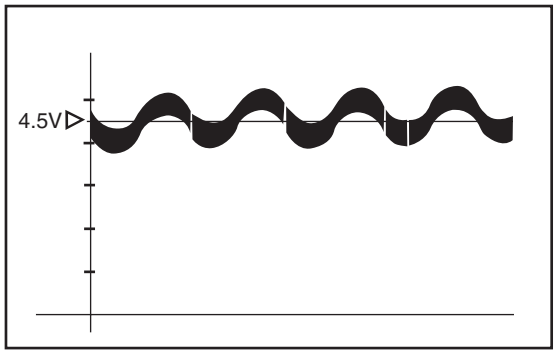


Fig.6-1.