

Service Manual



TS7

ORDER NO.
ARP3129

CANAL PLUS TUNER

TS7

BCT-1710

BCT-1720

BCT-1730

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model				Power Requirement	Remarks
	TS7	BCT-1710	BCT-1720	BCT-1730		
NYXK/FR	○	—	—	—	AC230V	
NYXK/SP	—	○	—	—	AC230V	
NYXK/IT	—	—	○	—	AC230V	
NYWXK/PL	—	—	—	○	AC230V	



For details, refer to "Important symbols for good services" on the next page.

SAFETY INFORMATION



This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

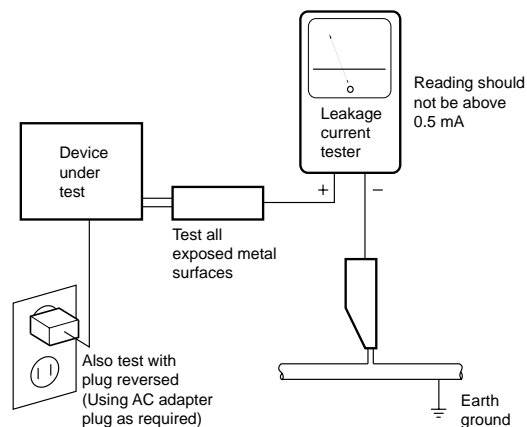
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

[Important symbols for good services]

In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely. When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety



You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments



To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning



For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws



To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts



Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount. For replacement parts or tools, the prescribed ones should be used.

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1. SPECIFICATIONS

RF

Moduration Method QPSK
Symbol Rate 18~30Mbaud
Inner Code Rate 1/2, 2/3, 3/4, 5/6,7/8
Error Correction Viterbi+Reed-solomon
Frequency Range 950 to 2150MHz
Input Level -65 to -25dBm
Max. Input Level 0dBm
Return Loss 8.0dB min.
Spurious Signal and
Local Oscillator Level -63dBm max.
LNB Power Supply Ver. : 12.5V to 14V
Hor. : 17V to 19V

VIDEO

S/N 55dB min.
Responce Flatness 3.0dB max at 4.7MHz
Differential Gain 10% max.
Differential Phase 5deg max.
Chroma Delay ±40nsec max.
Non Linearity 5% max.

AUDIO

S/N 72dB min.
Responce flatness ±1.0dB at 20Hz to 20kHz
Channel Separation 60dB min.

DATA COMMUNICATION

Serial Interface RS-232C
Modem(for TS7) V23
Modem(Except TS7) V22 bis + V42
IC Card ISO-7816

GENERAL

Power Requirement AC230V/50Hz
Power Consumption 18W typ.
Dimensions 380 (W) X 253 (D) X 71 (H)
Net Weight 2.0kg

(1) PACKING PARTS LIST

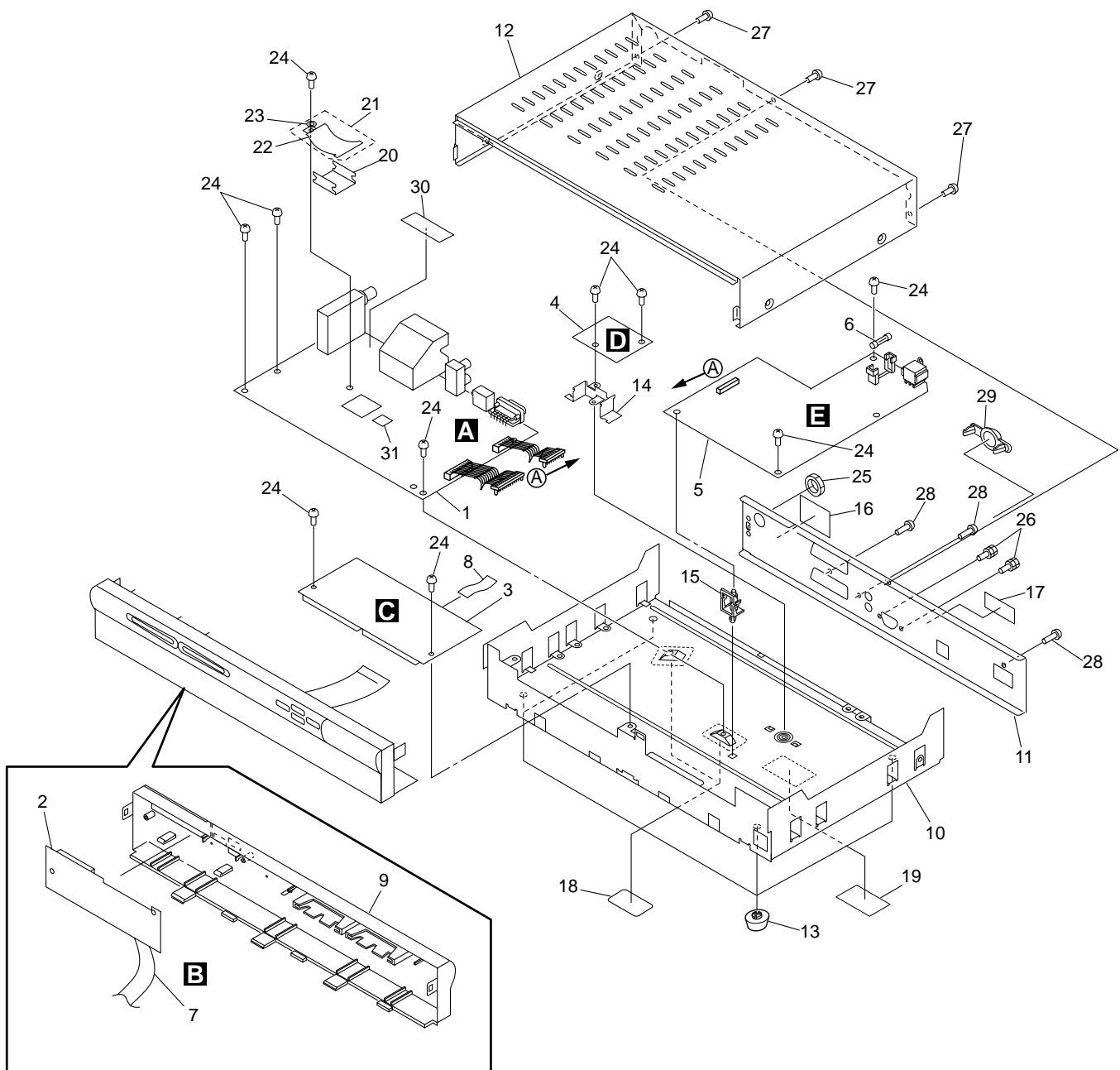
Mark	No.	Description	Part No.
	1	Packing Case	See Contrast Table(2)
	2	Side Pad L	BHA1146
	3	Side Pad R	BHA1147
	4	Sheet	AHG1153
	5	Remote Control Unit	See Contrast Table(2)
	6	Battery (R03) 2P	VEM1018
	7	Instruction Manual	See Contrast Table(2)
	8	Instruction Manual (Polish)	See Contrast Table(2)
	9	CE Declaration Sheet	See Contrast Table(2)
	10	Caution Sheet	See Contrast Table(2)
	11	Scart Cable(1m:Black)	BDH1039
△	12	AC Power Cord (2m:Black)	BDG1035
	13	Modem Cable (10m:White)	See Contrast Table(2)
NSP	14	Modem Adapter	See Contrast Table(2)
NSP	15	Catalogue Bag	BHG1047

(2) CONTRAST TABLE

TS7/NYXK/FR, BCT-1710/NYXK/SP, BCT-1720/NYXK/IT and BCT-1730/NYWXXK/PL are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			TS7 /NYXK/FR	BCT-1710 /NYXK/SP	BCT-1720 /NYXK/IT	BCT-1730 /NYWXXK/PL	
	1	Packing Case	BHD1369	BHD1533	BHD1534	BHD1535	
	5	Remote Control Unit	BXD1010	BXD1016	BXD1018	BXD1037	
	7	Instruction Manual	BRC1054	BRC1055	BRC1056	BRC1057	
		(French)		(Spanish)	(Italian)	(Polish)	
	8	Instruction Manual (Polish)	Not used	Not used	Not used	BRC1069	
NSP	9	CE Declaration Sheet	BRM1057	BRM1058	BRM1059	Not used	
NSP	10	Caution Sheet	Not used	Not used	Not used	BRM1061	
	13	Modem Cable	BDH1040	BDH1037	BDH1028	BDH1037	
	14	Modem Adapter	Not used	BKP1124	Not used	BKP1130	

2.2 EXTERIOR



(1) EXTERIOR PARTS LIST

Mark	No.	Description	Part No.
	1	MAIN ASSY	See Contrast Table (2)
	2	FRONT ASSY	BWX1216
	3	CARD ASSY	BWE1132
	4	MODEM ASSY	BWX1215
△	5	POWER ASSY	BXF1166
△	6	Fuse (1102: T2.5AH250V)	REK1102
	7	19P FFC(J2) (MAIN CN7002-FRONT CN8001)	BDD1057
	8	12P FFC(J1) (MAIN CN2501-CARD CN8503)	BDD1033
	9	Front Panel Assy	See Contrast Table (2)
	10	Chassis	BNA1161
	11	Rear Panel Assy	BWX1221
	12	Bonnet Case	BNE1136
	13	Foot	AEC-672
	14	PCB Holder	BNG1341
	15	Card Edge Spacer	BEC1246
NSP	16	Name Label	See Contrast Table (2)
NSP	17	Caution Label	BAL1446
	18	Protect Label	BAX1302
NSP	19	Modem Label	See Contrast Table (2)
	20	Heat Sink	BNH1061
	21	Heat Sink Assy	BNH1062
NSP	22	Heat Sink	BNH1060
NSP	23	Washer	ABE-053
	24	Screw	ABA1011
	25	Washer Faced Nut	BBN1005
	26	Hexagon Headed screw	BBA1059
	27	Screw	BBA1062
	28	Screw	BBZ30P080FZK
	29	Screw Cover	BMR1158
	30	Serial No. Label	See Contrast Table (2)
	31	FLASH Memory IC (IC3001)	See Contrast Table (2)

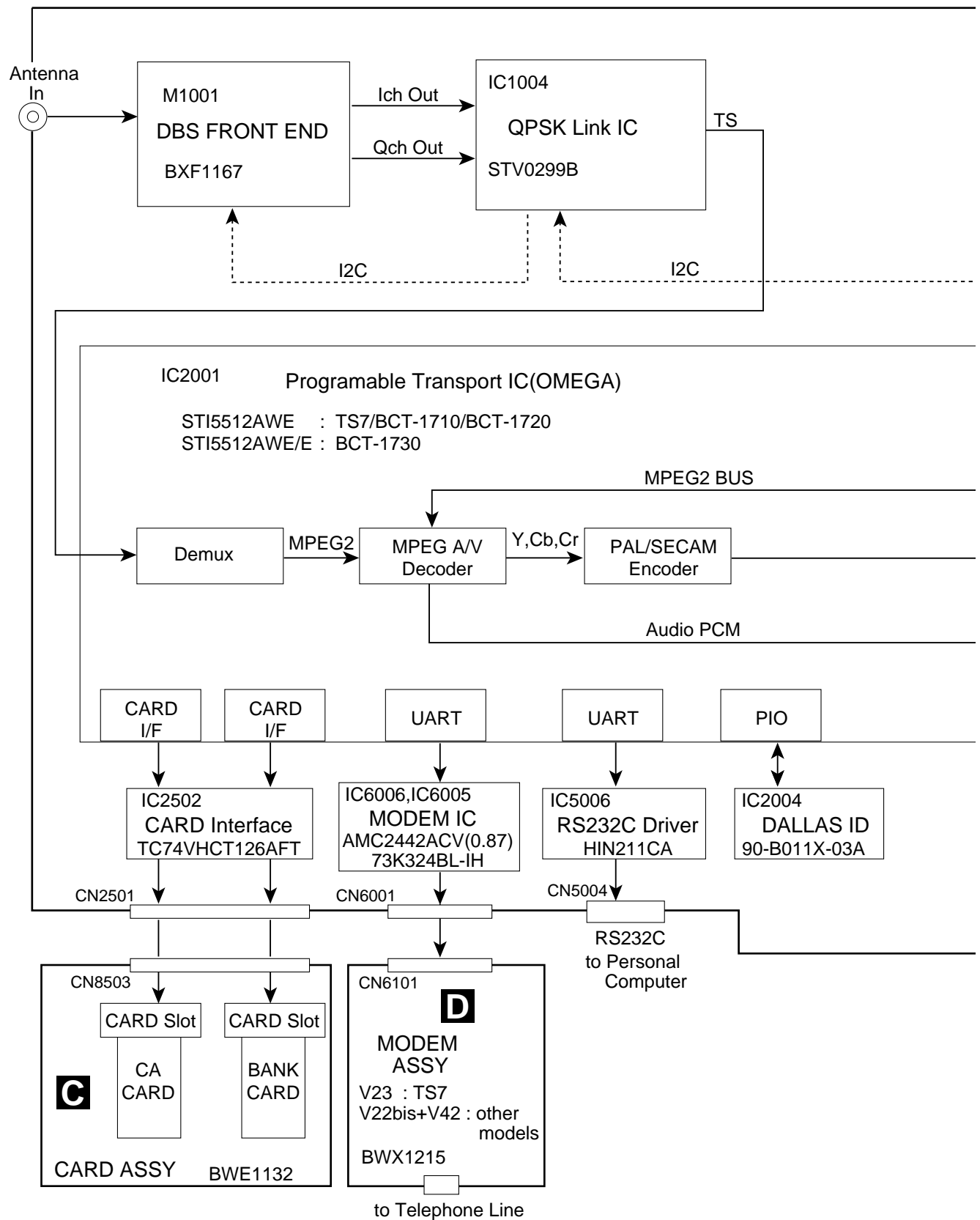
(2) CONTRAST TABLE

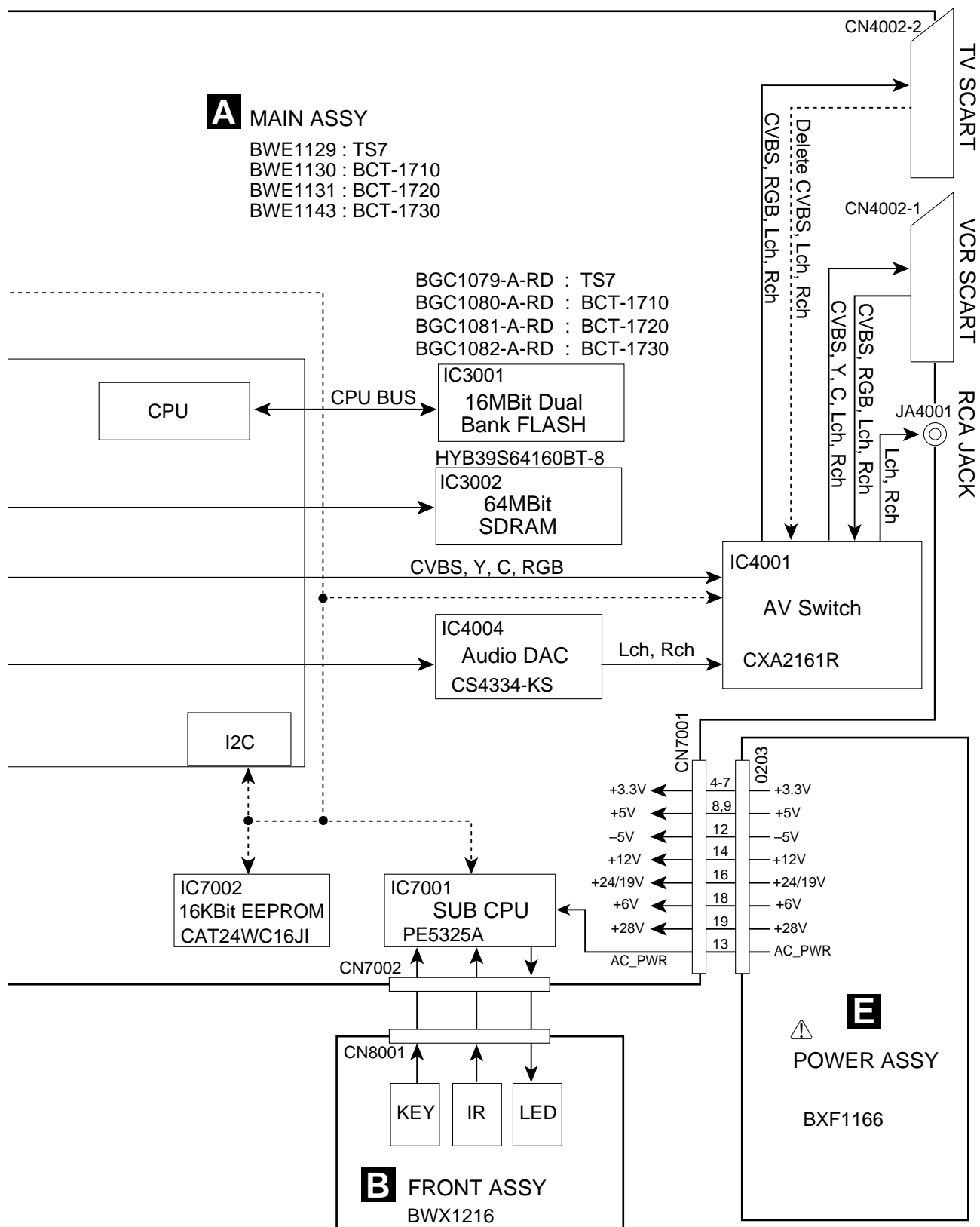
TS7/NYXK/FR, BCT-1710/NYXK/SP, BCT-1720/NYXK/IT and BCT-1730/NYWXXK/PL are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.				Remarks
			TS7 /NYXK/FR	BCT-1710 /NYXK/SP	BCT-1720 /NYXK/IT	BCT-1730 /NYWXXK/PL	
	1	MAIN ASSY	BWE1129	BWE1130	BWE1131	BWE1143	
	9	Front Panel Assy	BWX1217	BWX1218	BWX1219	BWX1220	
NSP	16	Name Label	BAL1449	BAL1453	BAL1454	BAL1455	
NSP	17	Caution Label	BAL1466	BAL1467	BAL1468	BAL1469	
NSP	19	Modem Label	Not used	Not used	Not used	BAL1456	
NSP	30	Serial No. Label	BAX1145	BAX1181	BAX1189	BAX1250	
	31	FLASH Memory IC (IC3001)	BGC1079-A-RD	BGC1080-A-RD	BGC1081-A-RD	BGC1082-A-RD	

3. BLOCKDIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCKDIAGRAM

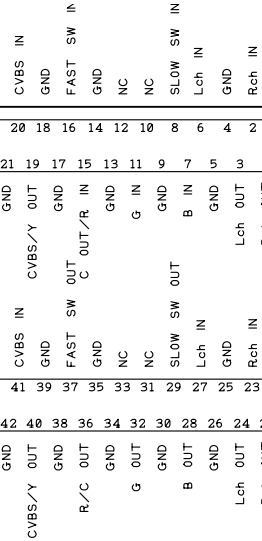




3.2 OVERALL WIRING DIAGRAM

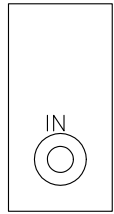
A

TUNER MODULE



PIN JACK D-SUB 9PIN
RCA RS232C

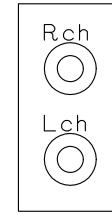
B



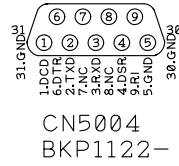
M1001
BXF1167-

VCR SCART
CN4002
BKN1019-

TV SCART



JA4001
BKB1017-



MAIN Ass'y
OEM

BWE1127-: France&Spain&Italy OEM
BWE1128-: Poland OEM
BWE1129-: France OEM for Service
BWE1130-: Spain OEM for Service
BWE1131-: Italy OEM for Service
BWE1143-: Poland OEM for Service

Circuit Blocks

B1E1127: CHDEC BLOCK
B2E1127: DMXCPU BLOCK
B3E1127: MEMORY BLOCK
B4E1127: ANALOG AV BLOCK
B5E1127: IO BLOCK
B6E1127: MODEM BLOCK
B7E1127: SUBCPU BLOCK
B8E1127: CARD BLOCK

C

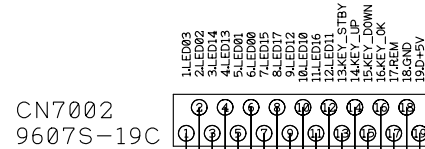
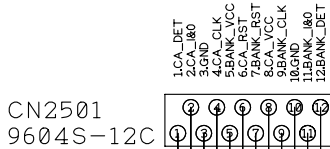
A(A1/8-A8/8) MAIN ASSY

(BWE1129 : TS7/NYXK/FR)
(BWE1130 : BCT-1710/NYXK/SP)
(BWE1131 : BCT-1720/NYXK/IT)
(BWE1143 : BCT-1730/NYXK/PL)

IC2001

STI5512AWE/E: BWE1128-,BWE1143-
STI5512AWE: Others

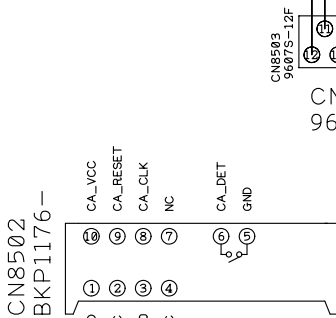
D



FFC CABLE
BDD1033-

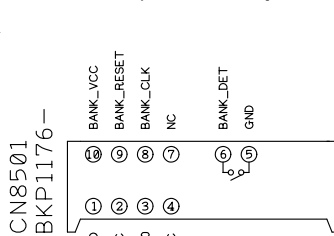
FFC CABLE
BDD1057-

E

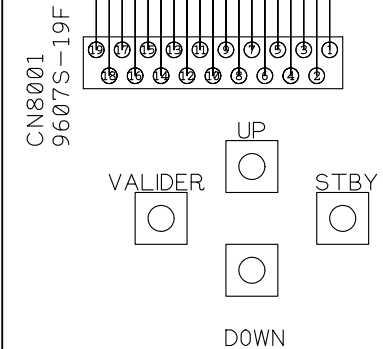


SMART CARD1
(CA)

**C CARD ASSY
(BWE1132)**

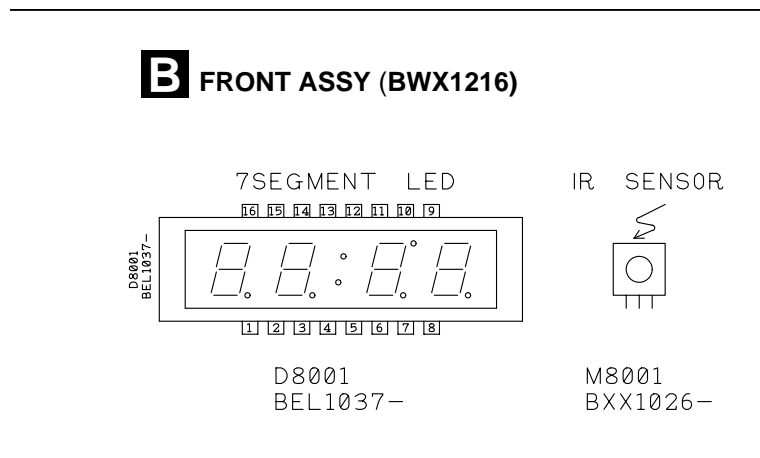
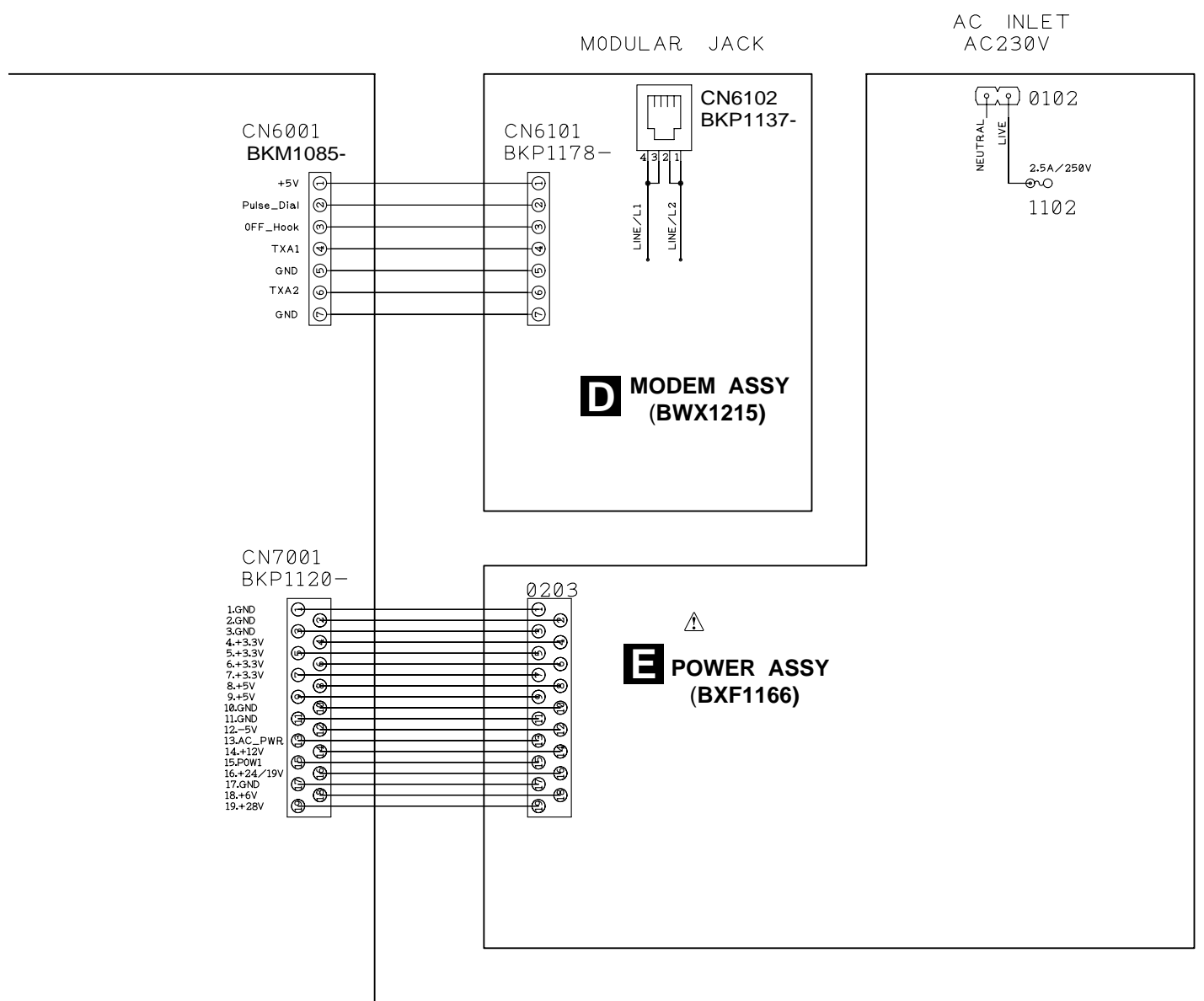


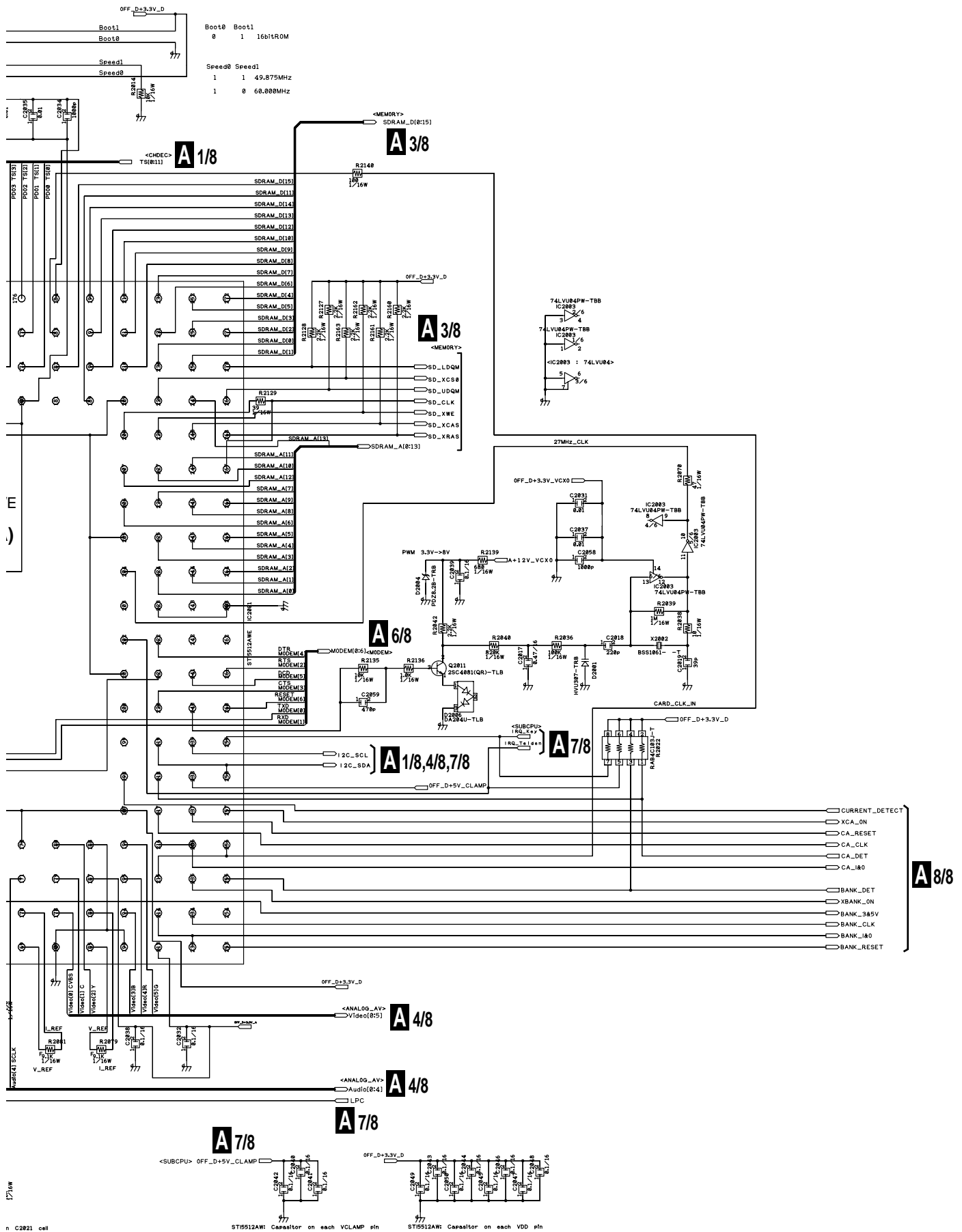
SMART CARD2
(BANK)



F

Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST"

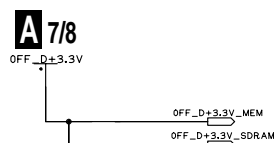
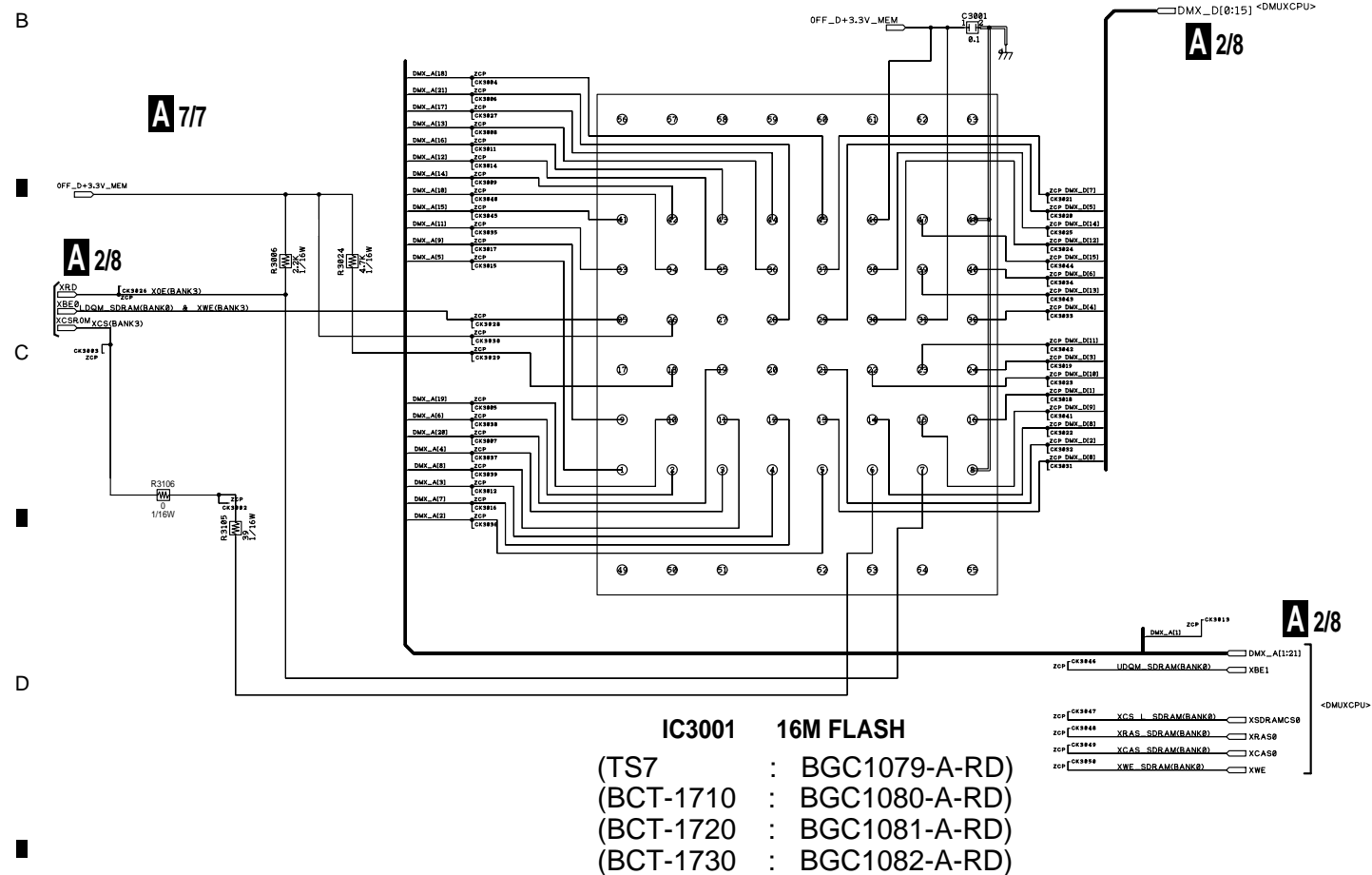




3.5 MAIN ASSY(3/8)

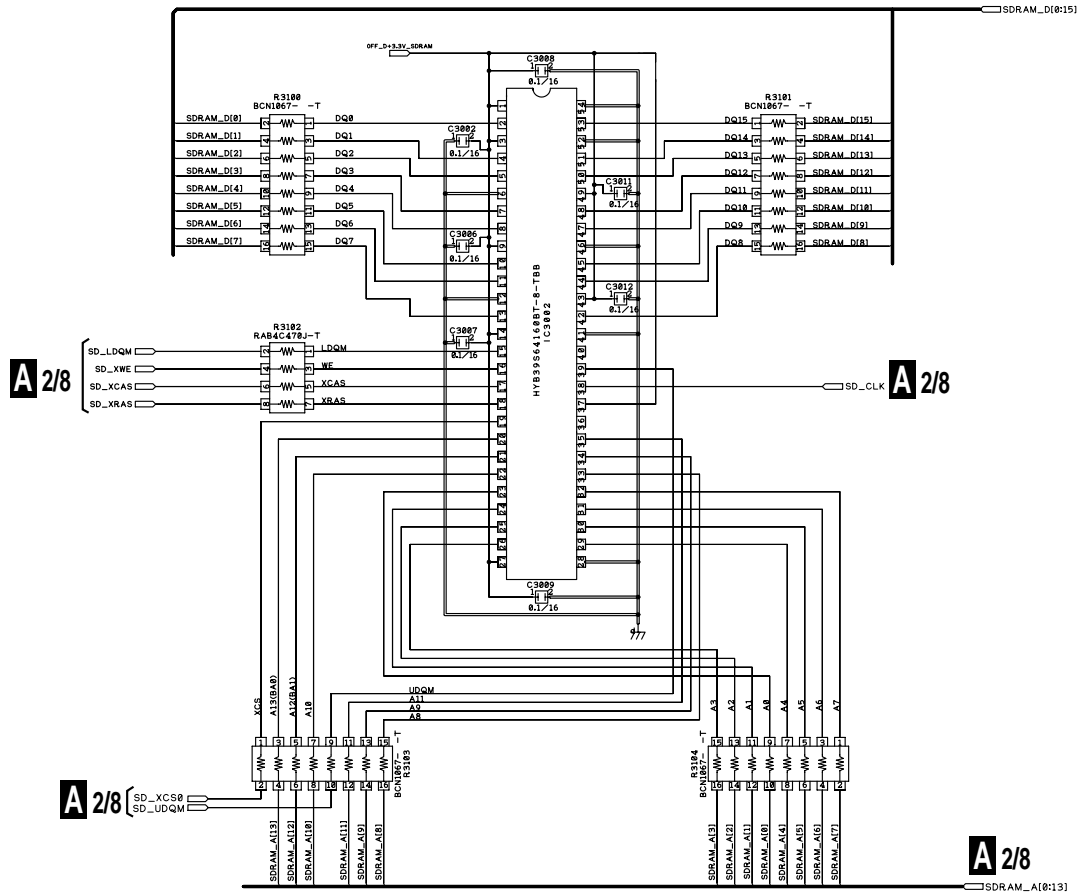
A 3/8 MAIN ASSY (3/8)
• MEMORY BLOCK

(TS7 : BWE1129)
(BCT-1710 : BWE1130)
(BCT-1720 : BWE1131)
(BCT-1730 : BWE1143)



64MBit SDRAM

A 2/8



A 2/8

A 2/8

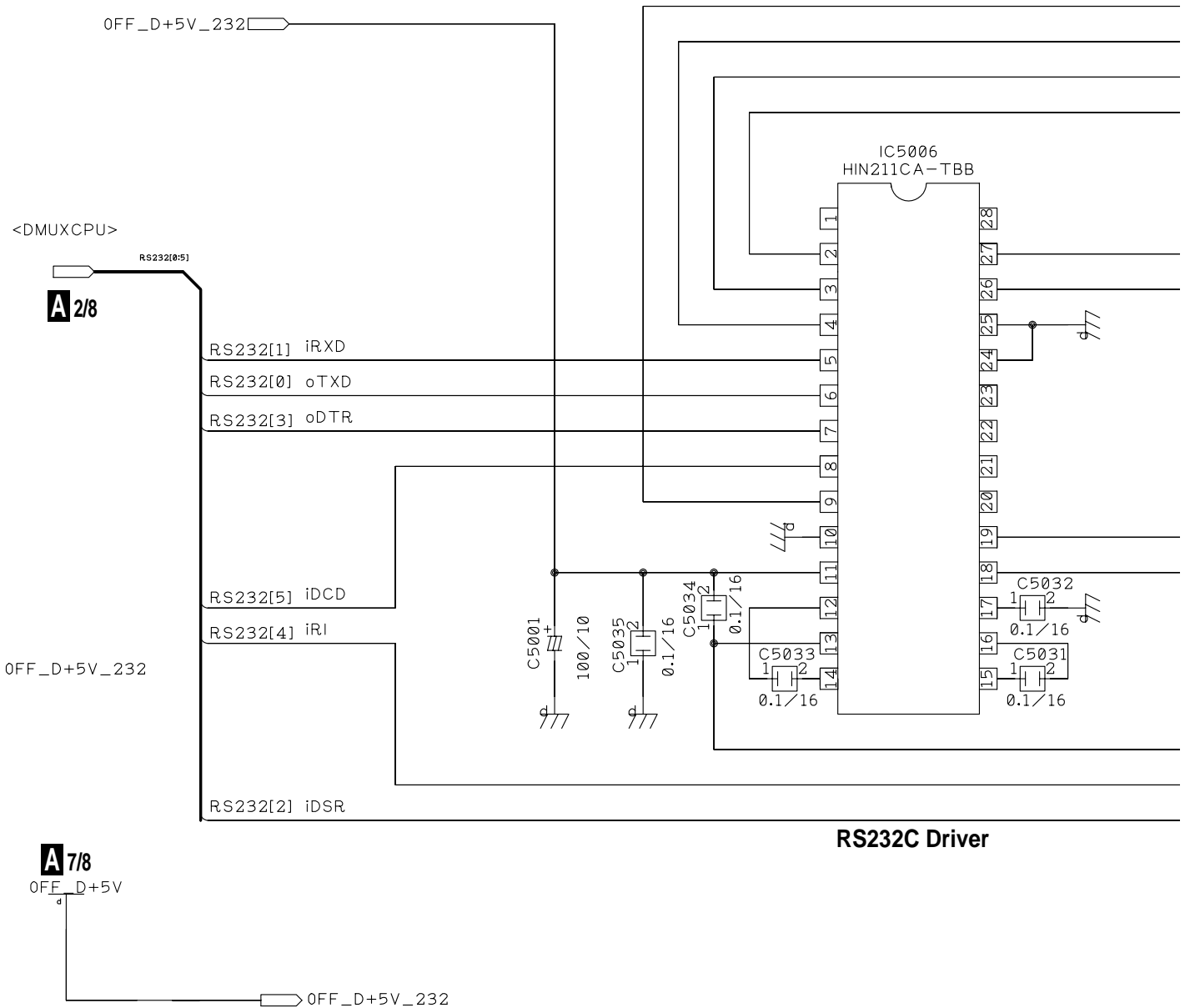
SDRAM_A[0:13]

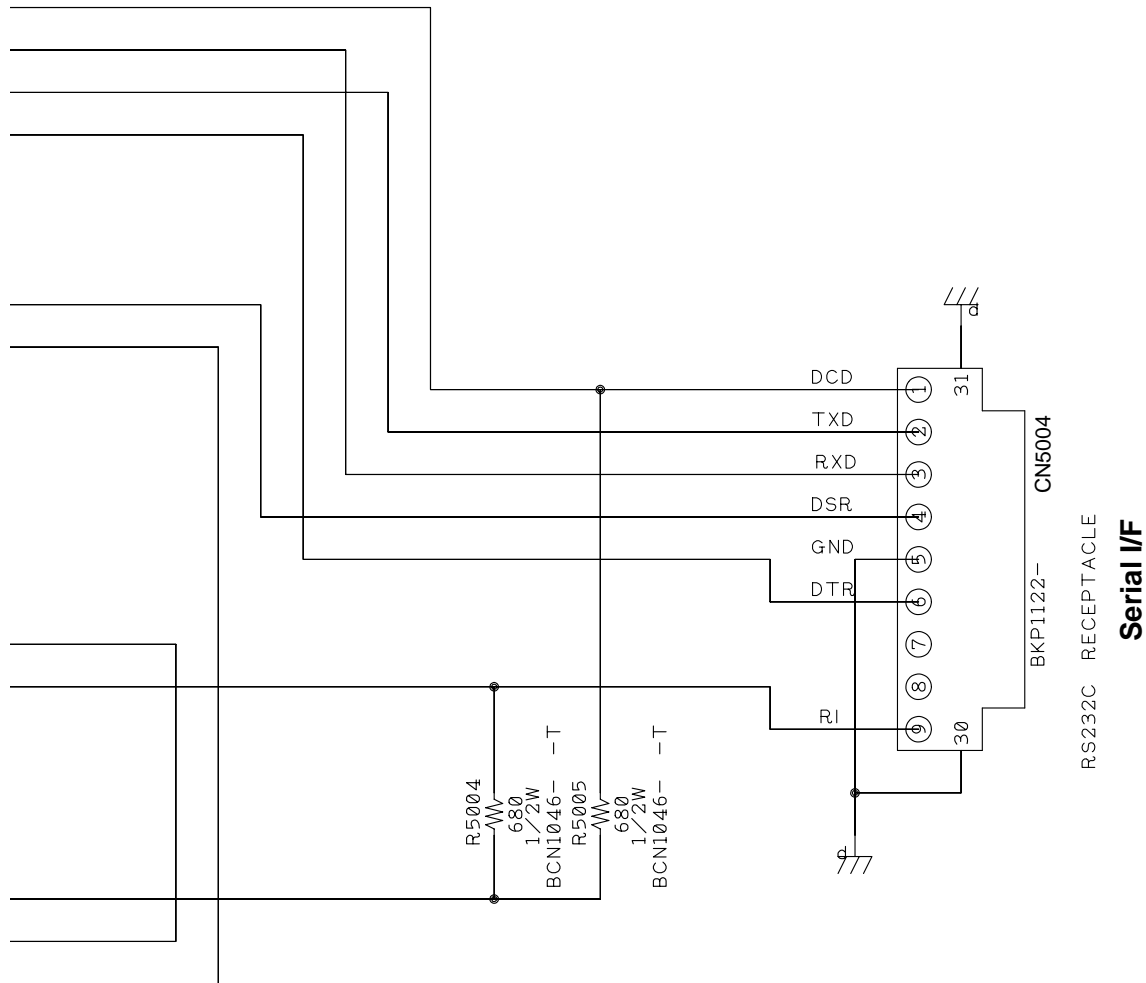
3.7 MAIN ASSY(5/8)

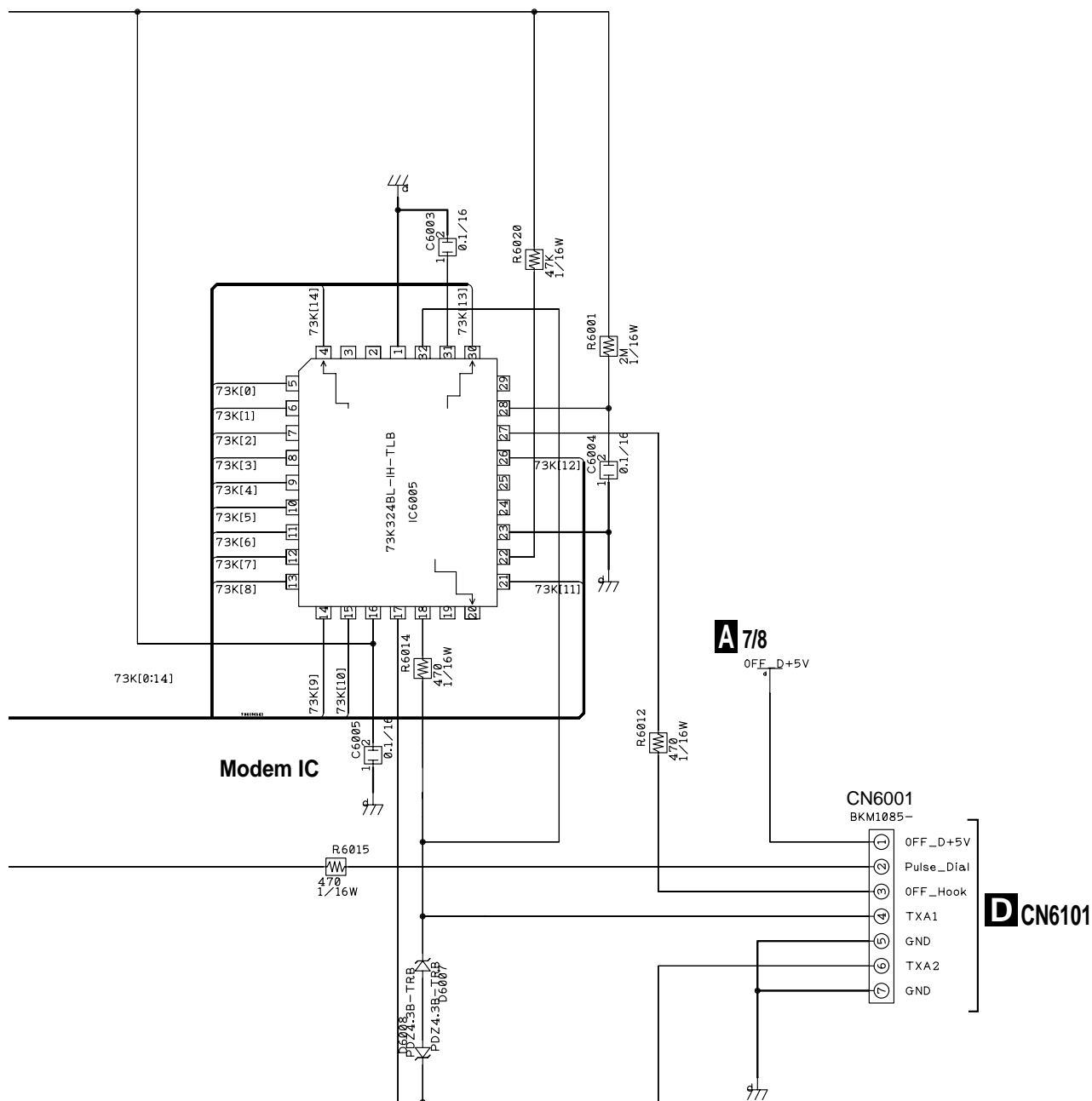
A 5/8 MAIN ASSY (5/8)

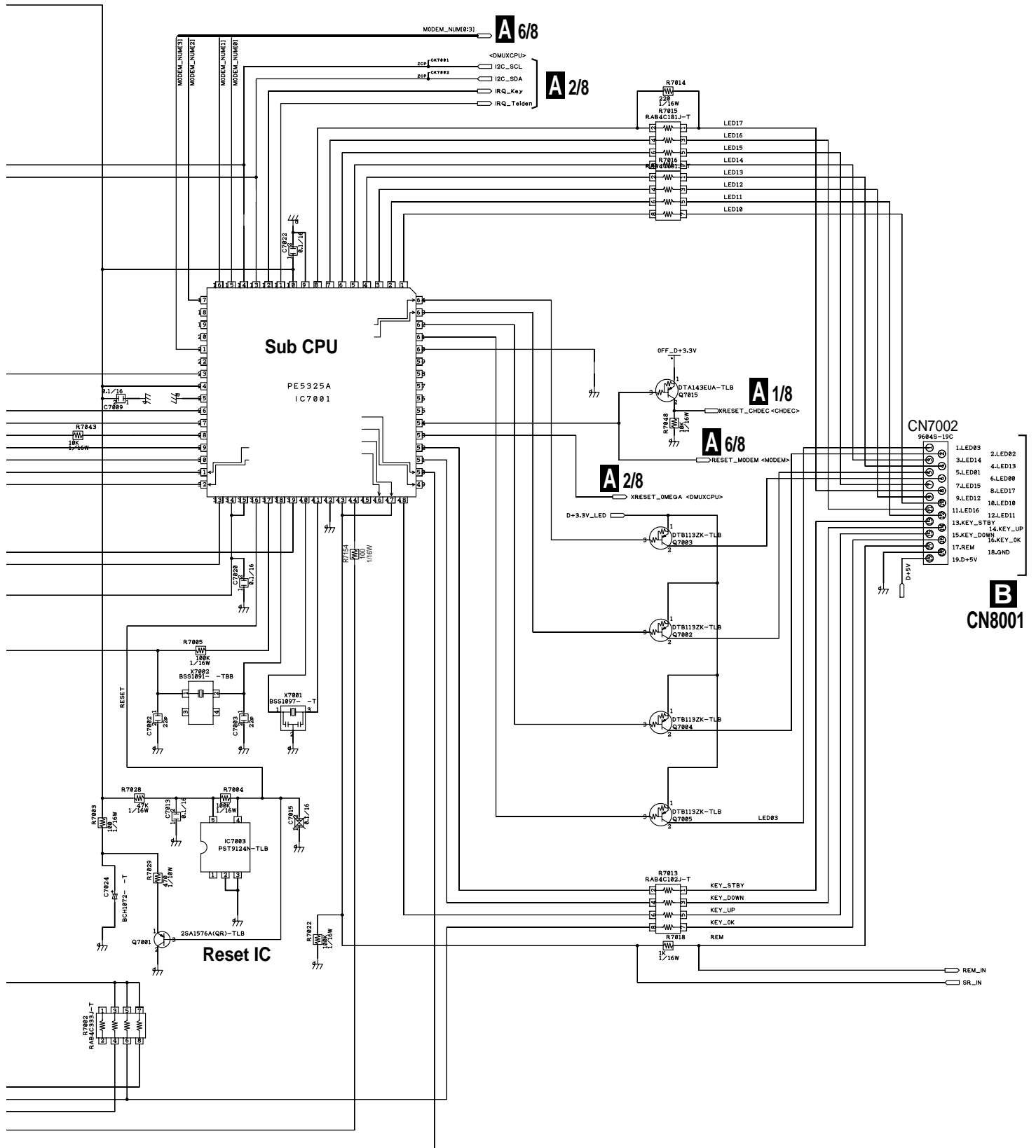
• IO BLOCK

(TS7 : BWE1129)
 (BCT-1710 : BWE1130)
 (BCT-1720 : BWE1131)
 (BCT-1730 : BWE1143)





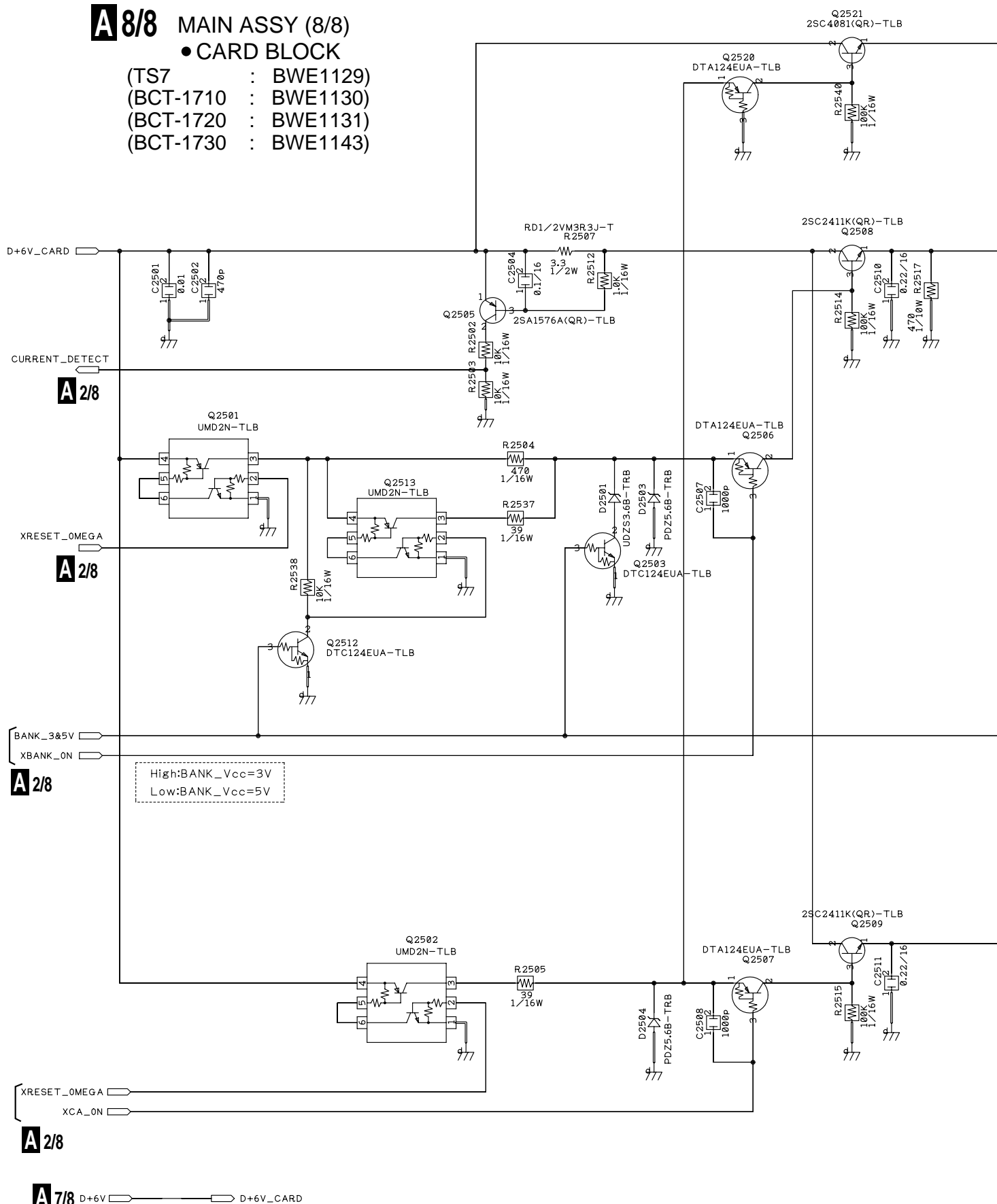


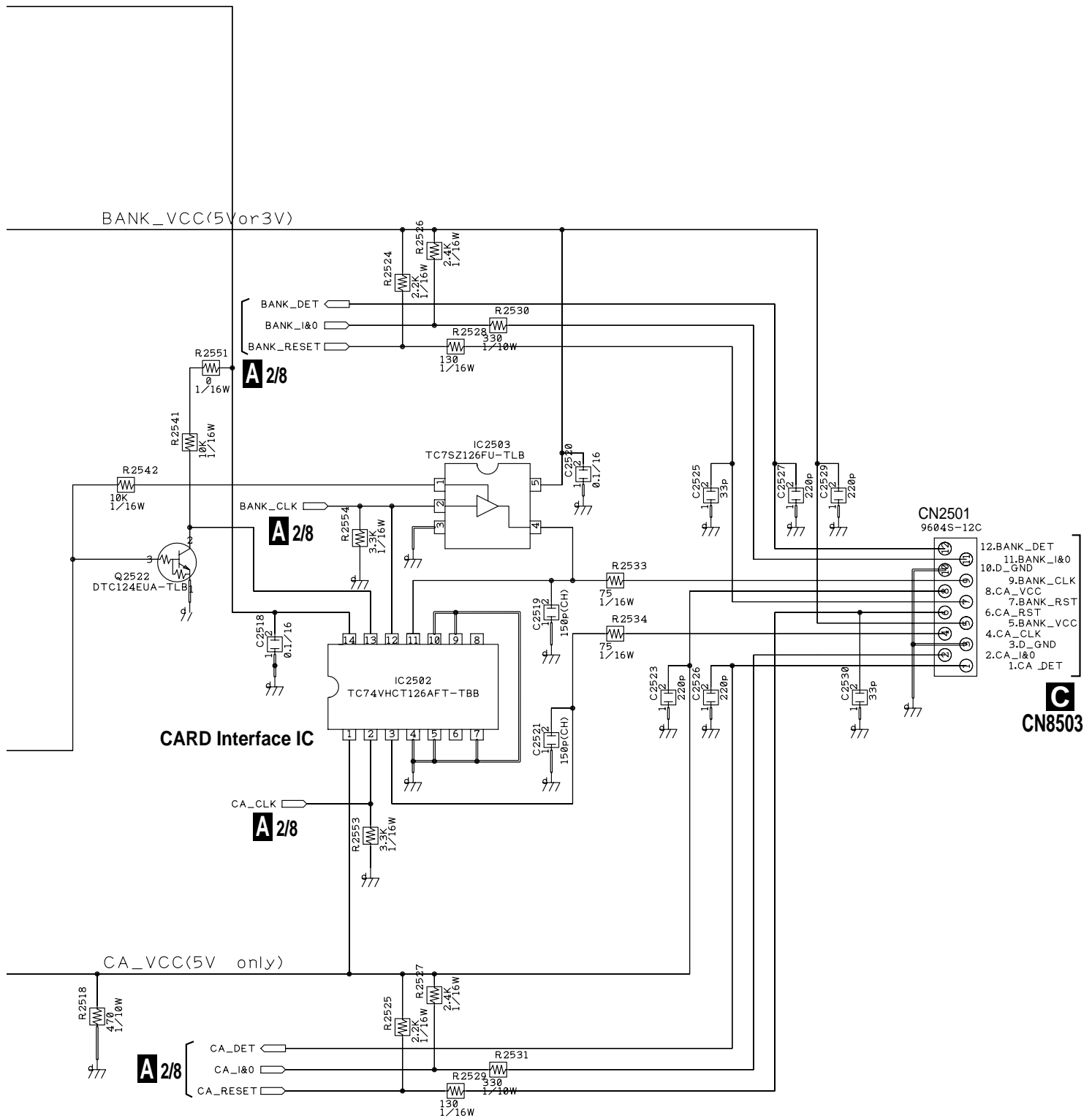


3.10 MAIN ASSY(8/8)

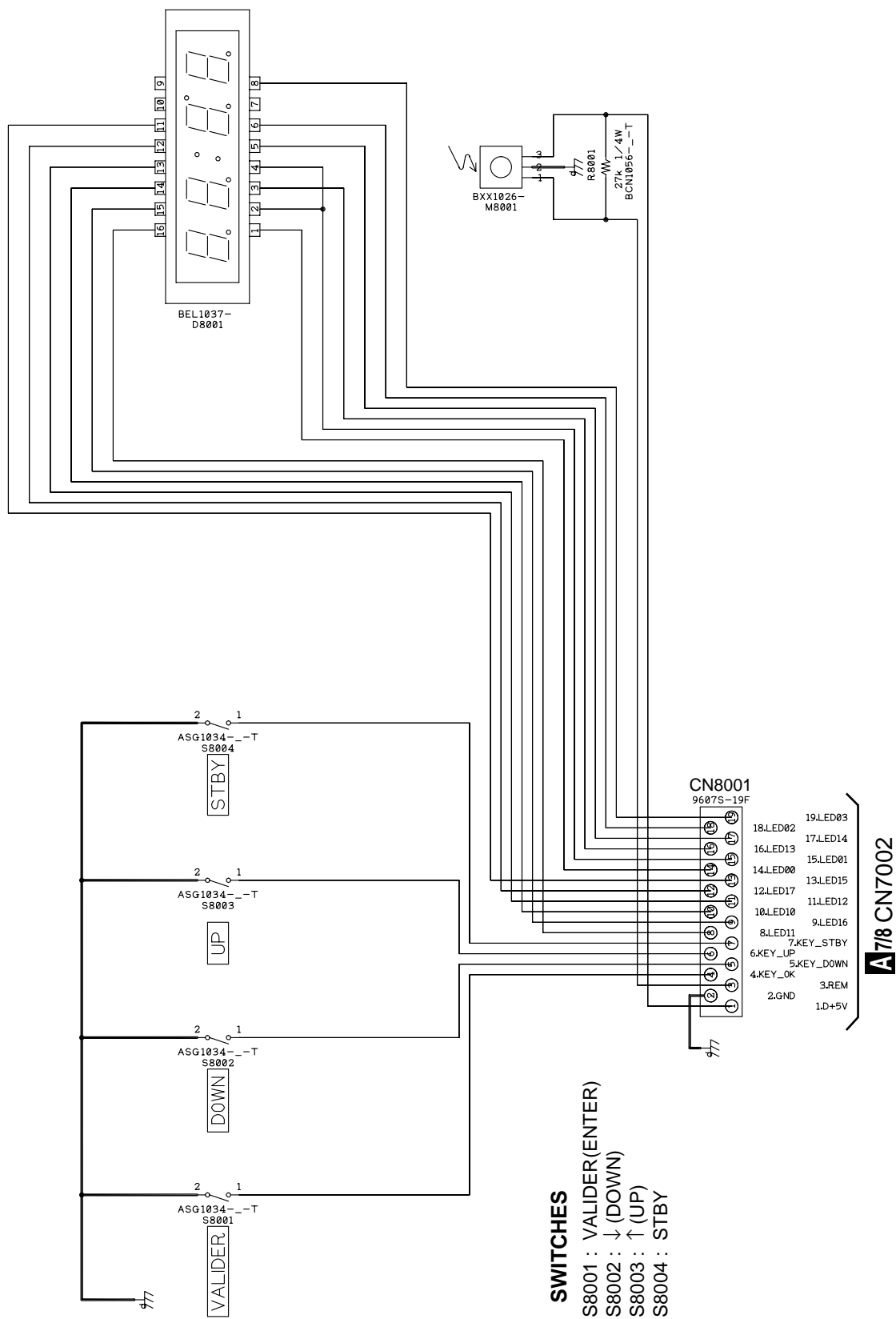
A 8/8 MAIN ASSY (8/8)
• CARD BLOCK

(TS7 : BWE1129)
(BCT-1710 : BWE1130)
(BCT-1720 : BWE1131)
(BCT-1730 : BWE1143)





3.11 FRONT ASSY



B FRONT ASSY (BW1216)

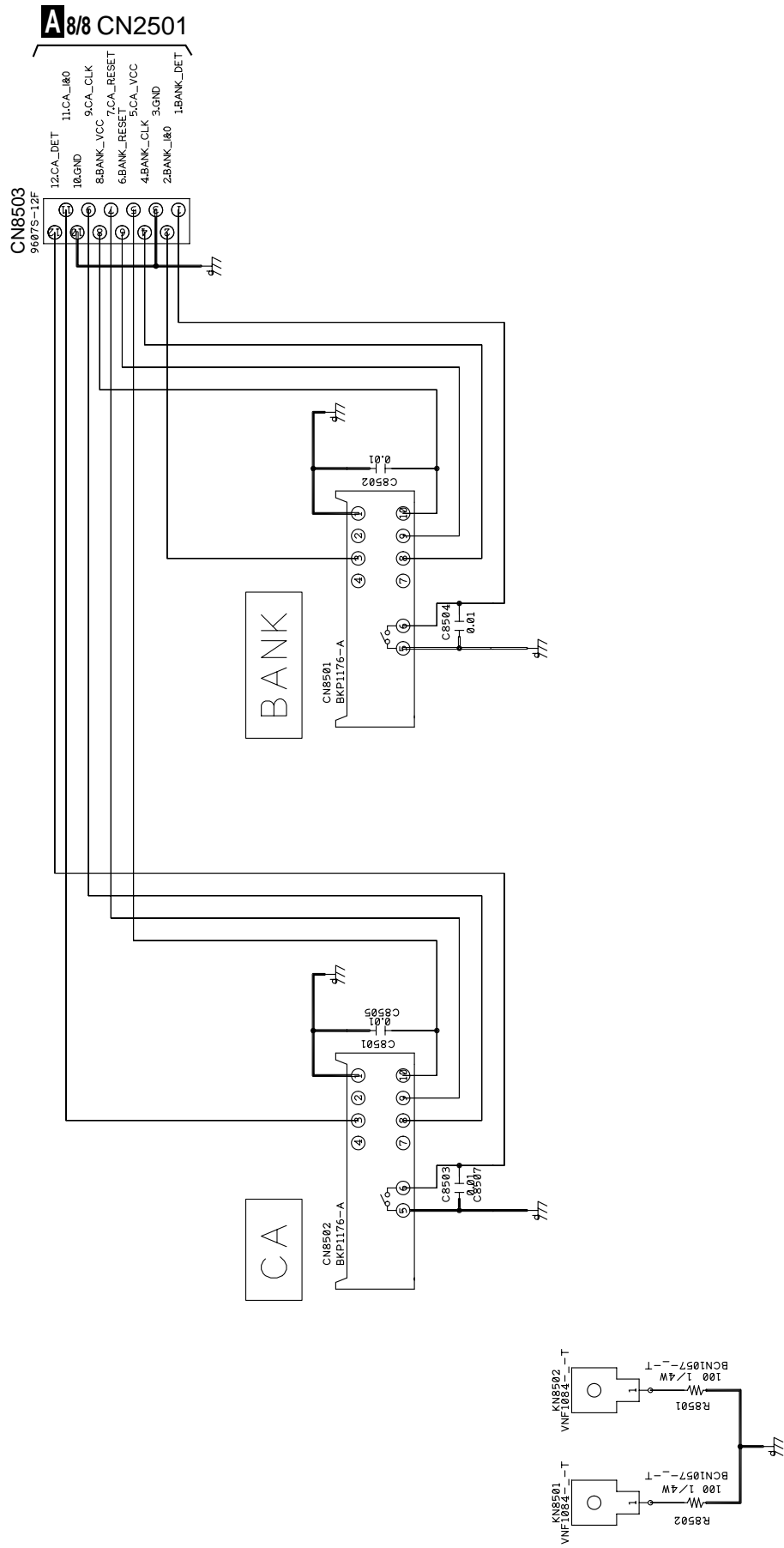
SWITCHES

S8001 : VALIDER(ENTER)
S8002 : ↓ (DOWN)
S8003 : ↑ (UP)
S8004 : STBY

A 7/8 CN7002

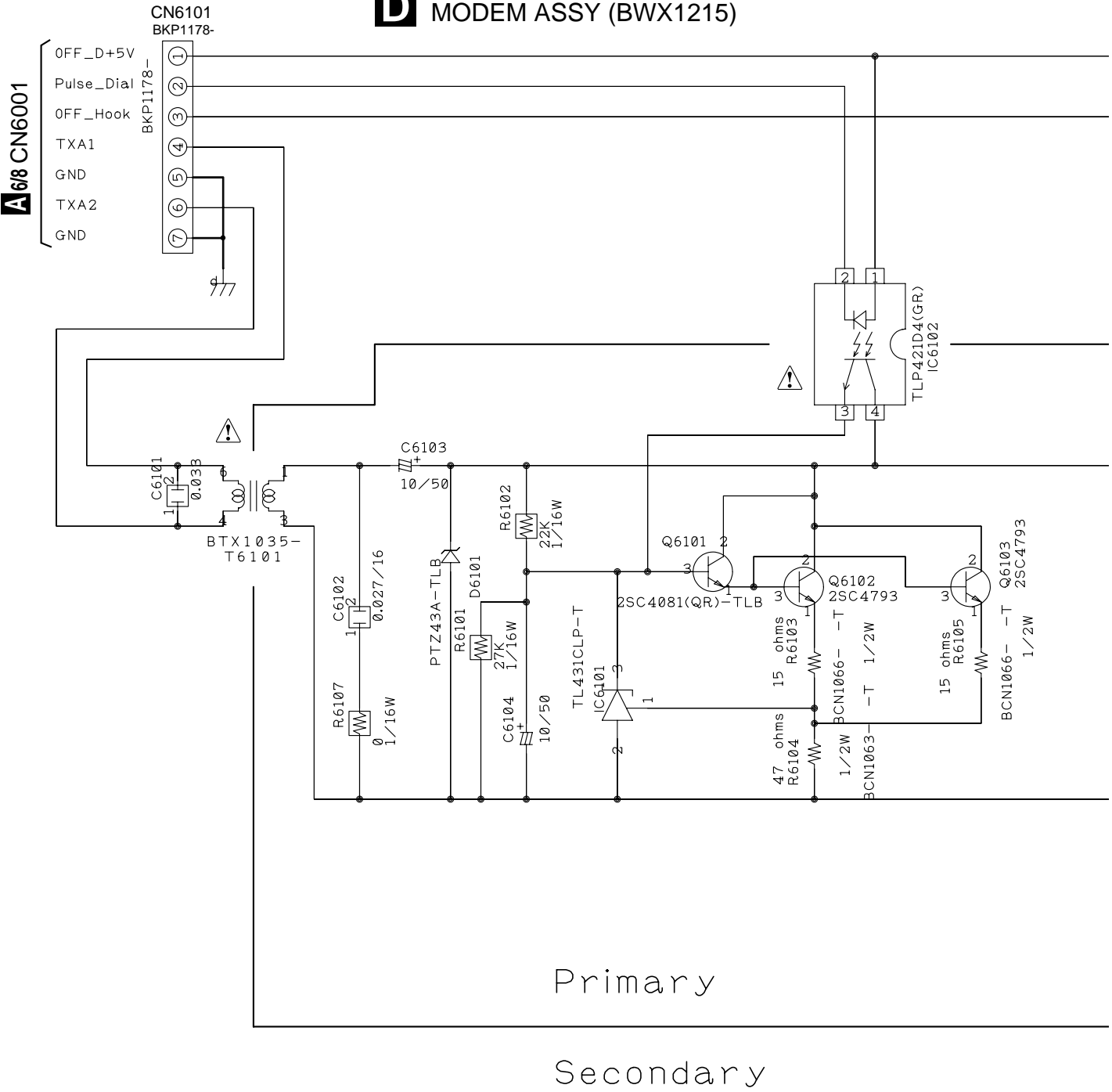
3.12 CARD ASSY

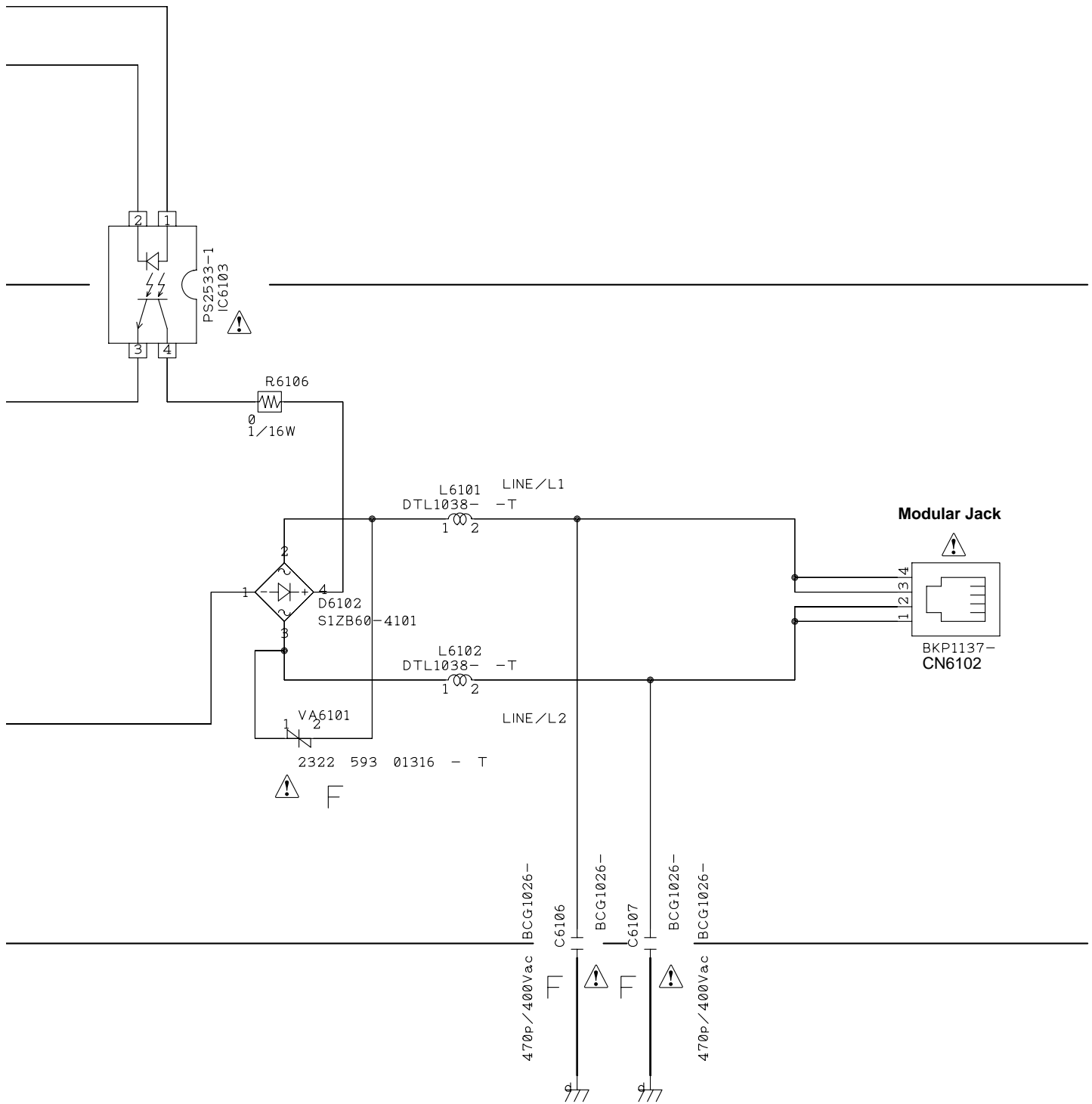
C CARD ASSY (BWE1132)



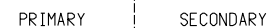
3.13 MODEM ASSY

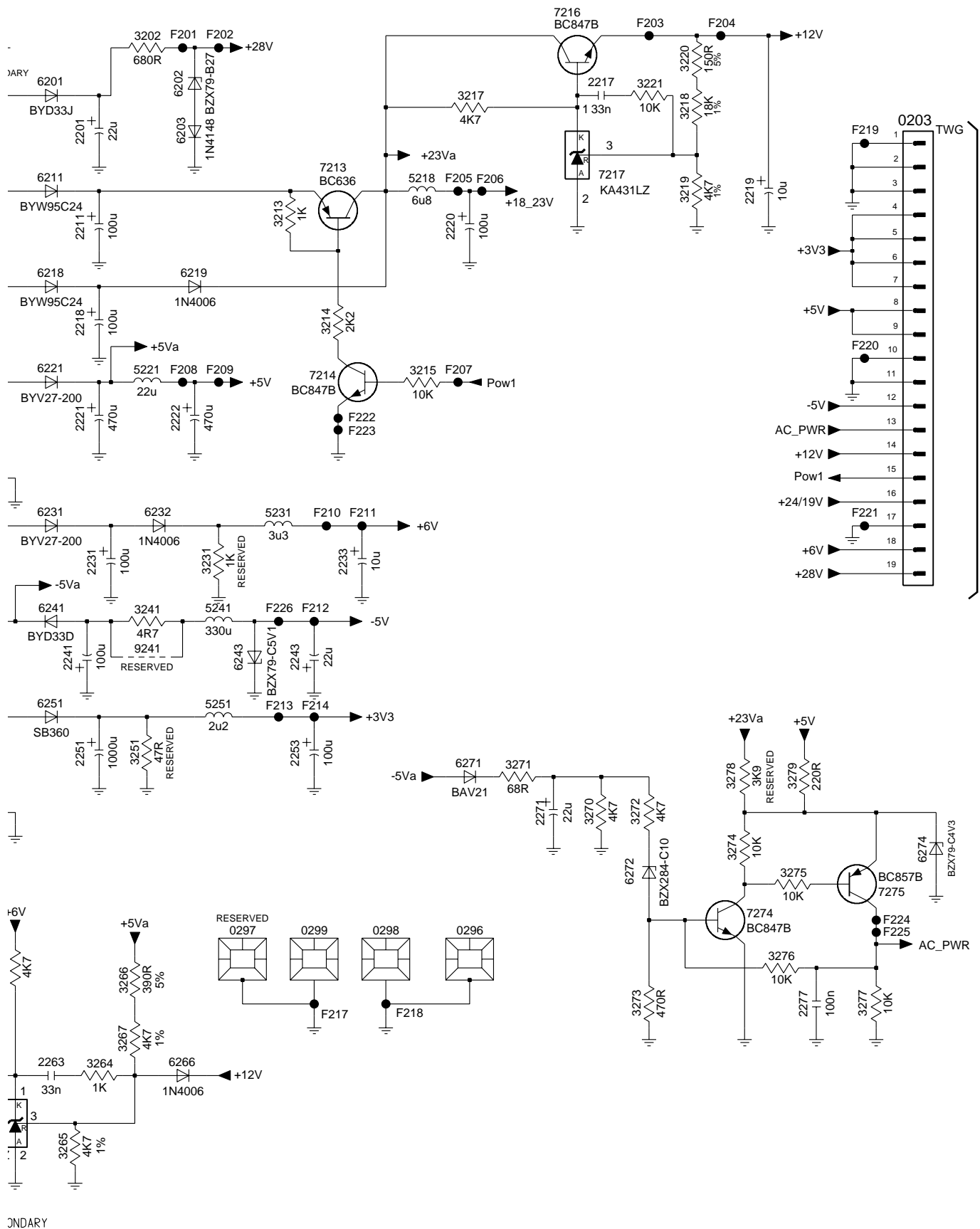
D MODEM ASSY (BW1215)





POWER ASSY (BXF1166)





A78 CN7001

4. PCB CONNECTION DIAGRAM

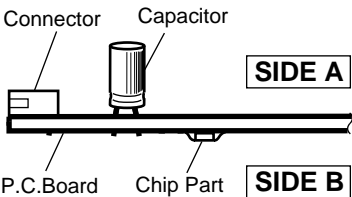
3.1 FRONT ASSY

NOTE FOR PCB DIAGRAMS :

- 1. Part numbers in PCB diagrams match those in the schematic diagrams.
- 2. A comparison between the main parts of PCB and schematic diagrams is shown below.

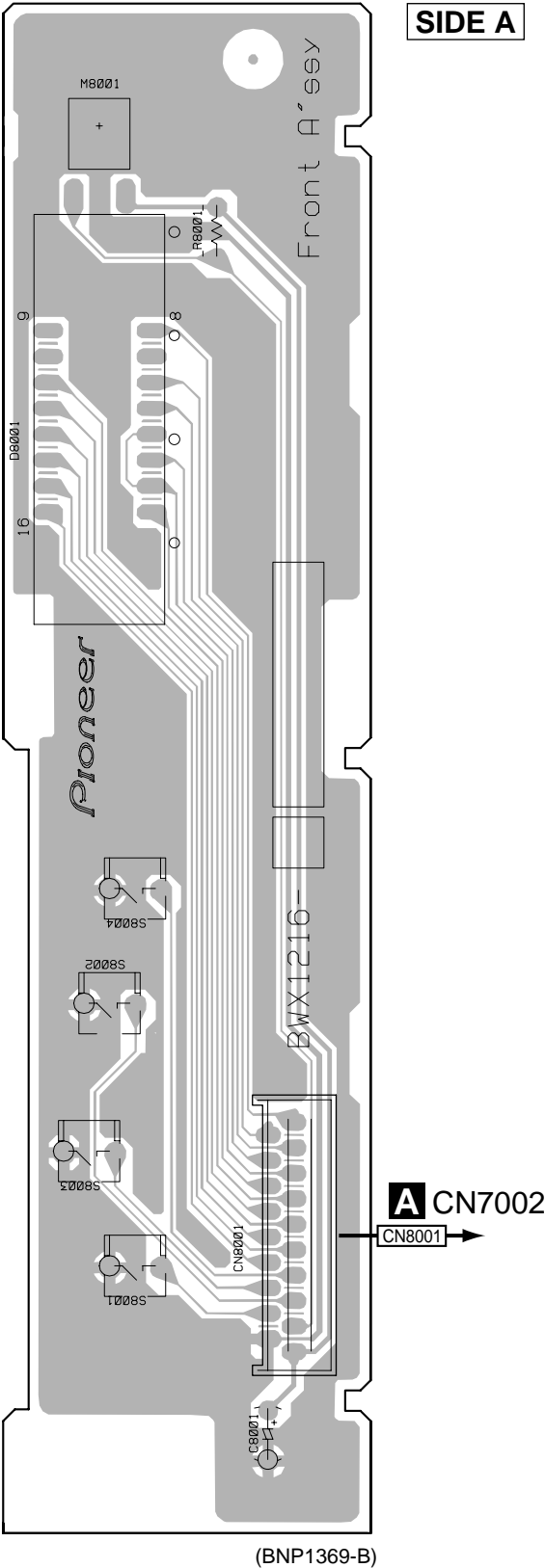
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

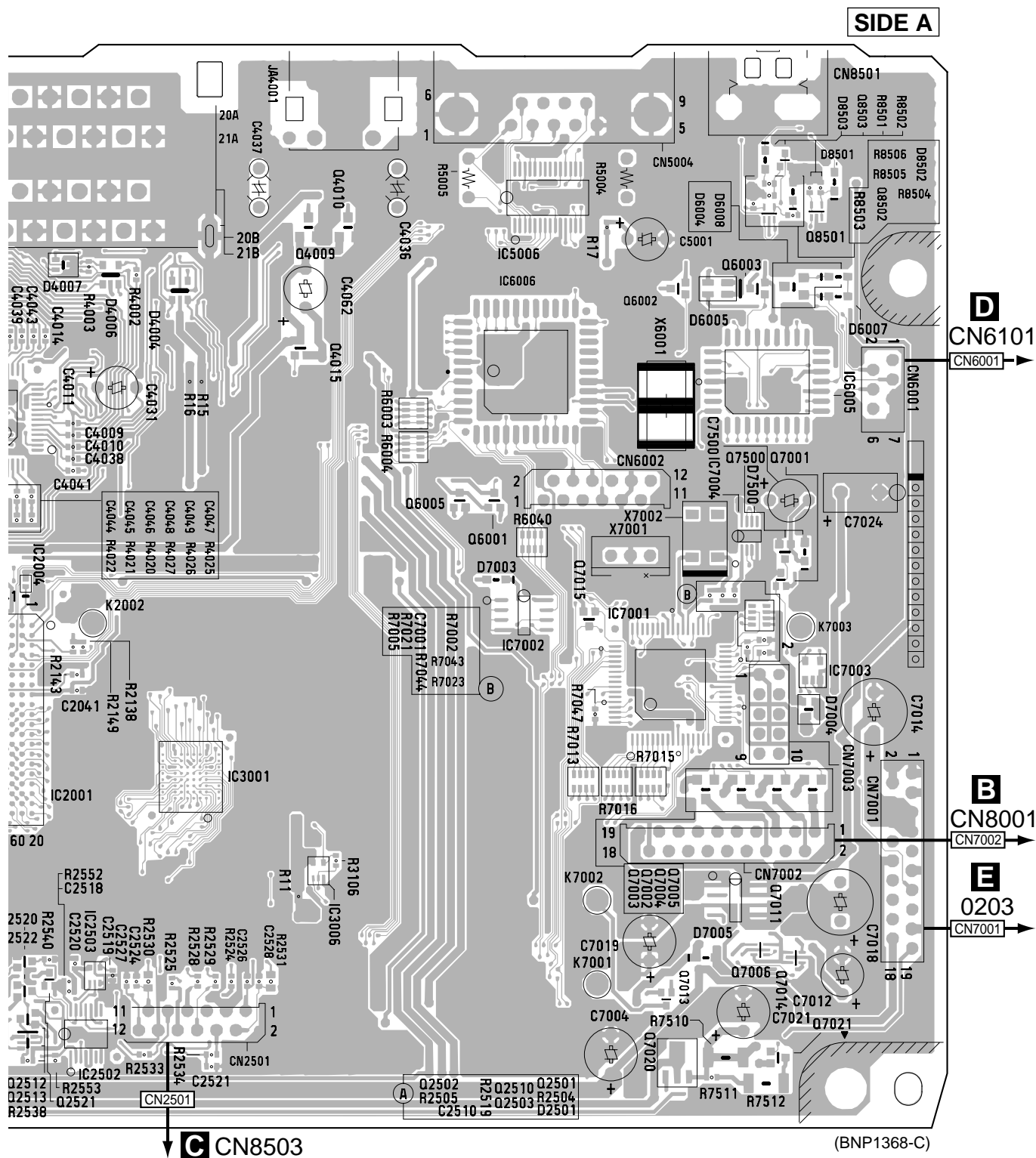
- 3. The parts mounted on this PCB include all necessary parts for several destinations.
- For further information for respective destinations, be sure to check with the schematic diagram.
- 4. View point of PCB diagrams.



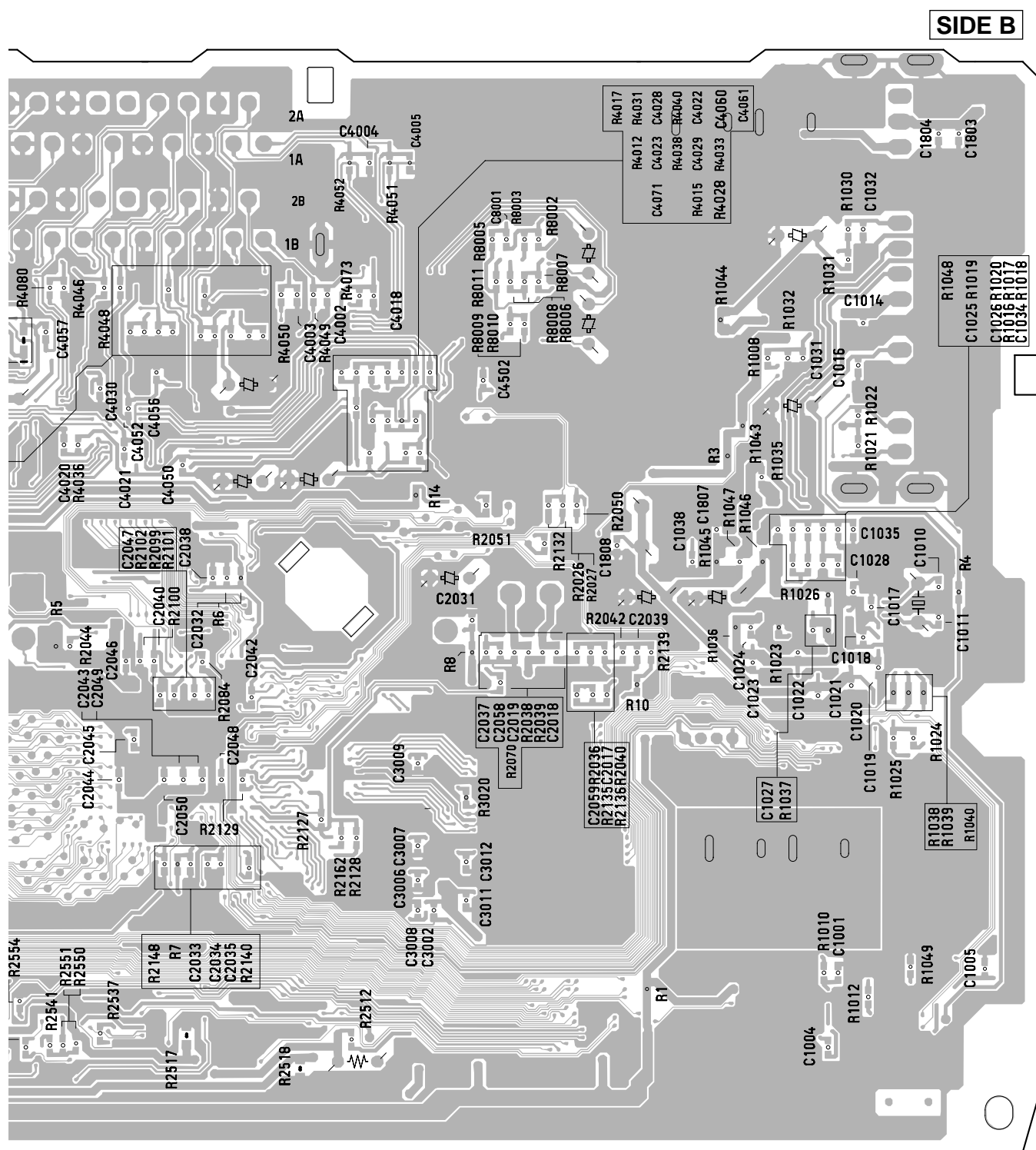
B FRONT ASSY

SIDE A





				Q4009 Q4010		IC5006	Q6002	Q6003	Q8503	Q8502	Q8501
				Q4015	Q6005 Q6001	IC6006 Q7015					IC6005
			IC3001			IC7002	IC7001	IC7004	Q7500	Q7001	IC7003
Q2522	IC2503			IC3006			Q7003	Q7002	Q7004	Q7005	Q7011
2 Q2513	Q2521	IC2502			Q2502 Q2510	Q2503 Q2501	Q7020	Q7013	Q7006	Q7014	Q7021



(BNP1368-C)

5. PCB PARTS LIST

NOTES: ●Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.

●The Δ mark found on some component parts indicates the importance of the safety factor of the part.

Therefore, when replacing, be sure to use parts of identical designation.

●When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω \rightarrow 56×10^1 \rightarrow 561 RD1/4PU 5 6 1 J

47k Ω \rightarrow 47×10^3 \rightarrow 473 RD1/4PU 4 7 3 J

0.5 Ω \rightarrow R50 RN2H R 5 0 K

1 Ω \rightarrow 1R0 RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω \rightarrow 562×10^1 \rightarrow 5621 RN1/4PC 5 6 2 1 F

■ CONTRAST OF PCB ASSEMBLIES

Mark	Symbol and Description	Part No.				Remarks
		TS7 /NYXK/FR	BCT-1710 /NYXK/SP	BCT-1720 /NYXK/IT	BCT-1730 /NYWXXK/PL	
Δ	MAIN ASSY	BWE1129	BWE1130	BWE1131	BWE1143	
	FRONT ASSY	BWX1216	BWX1216	BWX1216	BWX1216	
	CARD ASSY	BWE1132	BWE1132	BWE1132	BWE1132	
	MODEM ASSY	BWX1215	BWX1215	BWX1215	BWX1215	
	POWER ASSY	BXF1166	BXF1166	BXF1166	BXF1166	

A MAIN ASSY

BWE1129, BWE1130, BWE1131 and BWE1143 are constructed the same except for the following:

Mark	Symbol and Description	Part No.				Remarks
		BWE1129	BWE1130	BWE1131	BWE1143	
	IC2001 (OMEGA)	STI5512AWE	STI5512AWE	STI5512AWE	STI5512AWE/E	

● MAIN ASSY IC3001 CONTRAST TABLE

IC3001 (16M FLASH Memory) is different according to the model types as the following tabel.

This IC is not a assy service part but a set service part.

Mark	Symbol and Description	Part No.				Remarks
		TS7 /NYXK/FR	BCT-1710 /NYXK/SP	BCT-1720 /NYXK/IT	BCT-1730 /NYWXXK/PL	
	IC3001 (16M FLASH)	BGC1079-A-RD	BGC1080-A-RD	BGC-1081-A-RD	BGC1082-A-RD	

Mark No. Description Part No.

A1/8 MAIN ASSY(1/8)_CHDEC BLOCK

SEMICONDUCTORS

IC1002	BA25BC0FP
IC1001	KA317MRTM
IC1004	STV0299B
Q1002	2SA1576A
Q1011	2SB1188
Q1007,Q1008	2SD1664
Q1005	DTC124EUA
Q1004,Q1006	UMD2N
Q1003	UMG1N
D1007,D1011	1SS355
D1010	DA204U
D1006	PDZ27B
D1008	PDZ5.6B
D1005	RB160L-40
VA1000	AVR-M1608C120MT2AB

CAPACITORS

C1802,C1804,C1806,C1808	CCSRCH221J50
C1010,C1011	CCSRCH330J50
C1012,C1037	CEHAT470M25
C1032,C1801,C1803,C1805	CKSRYB102K50
C1002,C1006,C1014,C1016,C1038	CKSRYB103K50
C1029,C1030	CKSRYB104K16
C1807	CKSRYB105K6R3
C1001	CKSRYB332K50
C1017-C1024,C1027,C1028,C1031	CKSRYB473K16
C1034,C1035	CKSRYB473K16

C1004,C1005	CKSRYF474Z16
-------------	--------------

RESISTORS

R1011,R1033	RS1/10S3601F
R1013	RS1/10S3901F
R1010	RS1/16S1200F
R1012	RS1/16S1502F
R1005,R1006	RS1/2S1R8J

Other Resistors	RS1/16S□□□J
-----------------	-------------

OTHERS

M1001	DBS Front End	BXF1167
H1000,H1001	Fuse Holder	AKR-035
X1001 (4MHz)		BSS1056

A2/8 MAIN ASSY(2/8)_DMXCPU BLOCK

SEMICONDUCTORS

IC2001	STI5512AWE
IC2003	74LVU04PW
IC2004	90-B011X-03A
Q2011	2SC4081
D2006	DA204U

D2001	HVU307
D2004	PDZ8.2B

CAPACITORS

C2018	CCSRCH221J50
C2019	CCSRCH390J50
C2034,C2058	CKSRYB102K50
C2031,C2033,C2035,C2037	CKSRYB103K50
C2059	CKSRYB471K50

Mark No. Description Part No.

C2032,C2038-C2050	CKSRYF104Z16
C2017	CKSRYF474Z16

RESISTORS

R2022	RAB4C103J
R2054	RAB4C222J
R2079,R2081	RS1/16S9101F
Other Resistors	RS1/16S□□□J

OTHERS

X2002 (27MHz)	BSS1061
---------------	---------

A3/8 MAIN ASSY(3/8)_MEMORY BLOCK

SEMICONDUCTORS

IC3002	HYB39S64160BT-8
--------	-----------------

CAPACITORS

C3001,C3002,C3006-C3009	CKSRYF104Z16
C3011,C3012	CKSRYF104Z16

RESISTORS

R3100,R3101,	
R3102	RAB4C470J
Other Resistors	RS1/16S□□□J

A4/8 MAIN ASSY(4/8)_ANALOG AV BLOCK

SEMICONDUCTORS

IC4004	CS4334-KS
IC4001	CXA2161R
IC4003	NJM4558MD
Q4015	DTA143EUA
Q4001,Q4002,Q4009,Q4010	DTC123TKA

D4004,D4006,D4008,D4009	FTZ12E
D4005	PDZ12B
D4007	UMZ12N

CAPACITORS

C4022,C4023	CCSRCH121J50
C4028,C4029	CCSRCH391J50
C4036,C4037	CEANP100M50
C4031,C4051	CEHAT100M50
C4070	CEHAT101M10

C4062	CEHAT1R0M50
C4053	CEHAT221M25
C4002-C4007,C4016,C4017	CKSRYB102K50
C4024,C4025,C4502	CKSRYB103K50
C4009-C4011,C4038,C4044-C4049	CKSRYB104K16

C4039,C4040,C4060,C4061	CKSRYB105K6R3
C4018-C4021,C4030,C4050,C4052	CKSRYF104Z16
C4056-C4059	CKSRYF104Z16

RESISTORS

R4020-R4022,R4025,R4026	RS1/16S2000F
R4012,R4015	RS1/16S2202F
Other Resistors	RS1/16S□□□J

OTHERS

JA4001	2P Pin Jack	BKB1017
CN4002	Dual Scart Connector	BKN1019

Mark No. **Description** **Part No.**

A5/8 MAIN ASSY(5/8)_IO BLOCK

SEMICONDUCTORS

IC5006 HIN211CA

CAPACITORS

C5001 CEHAT101M10
C5031-C5035 CKSRYF104Z16

RESISTORS

R5004,R5005 BCN1046

OTHERS

CN5004 DSUB 9P Connector BKP1122

A6/8 MAIN ASSY(6/8)_MODEM BLOCK

SEMICONDUCTORS

IC6005 73K324BL-IH
IC6006 AMC2442ACV(0.87)
Q6001 DTA143EUA
Q6005 DTC144TUA
D6007,D6008 PDZ4.3B

CAPACITORS

C6006,C6007 CCSRCH390J50
C6002 CKSRYB102K50
C6001,C6003-C6005 CKSRYF104Z16

RESISTORS

Other Resistors RS1/16S□□□J

OTHERS

CN6001 7P Plug BKM1085
X6001 (11.0592MHz) BSS1099

A7/8 MAIN ASSY(7/8)_SUBCPU BLOCK

SEMICONDUCTORS

IC7002 CAT24WC16JI
IC7001 PE5325A
IC7003 PST9124N
IC7004 TC7W04FU
Q7001 2SA1576A

Q7013 2SC4081
Q7015 DTA143EUA
Q7002-Q7005 DTB113ZK
Q7011 TPC8201
Q7006,Q7014 UMG1N

D7003 1SS355
D7004 DAP202U
D7005 PDZ4.7B

CAPACITORS

C7024 (0.047F/5.5V) BCH1072
C7002,C7003 CCSRCH220J50
C7007,C7501 CCSRCH221J50
C7004,C7019 CEHAT101M25
C7018 CEHAT221M25

C7021 CEHAT470M50
C7014 CEHAT471M10
C7008 CKSRYB471K50
C7016,C7017 CKSRYB473K16

Mark No. **Description** **Part No.**

C7001,C7005,C7006,C7009,C7011
C7013,C7020,C7022

CKSRYF104Z16
CKSRYF104Z16

RESISTORS

R7013 RAB4C102J
R7015,R7016 RAB4C181J
R7002 RAB4C333J
R7024,R7025,R7029 RS1/10S471J
R7026,R7027 RS1/10S821J

Other Resistors

RS1/16S□□□J

OTHERS

CN7002 19P FFC Connector 9604S-19C
CN7001 19P Plug BKP1120
X7002 (32.768kHz) BSS1091
X7001 (8.0MHz) BSS1097

A8/8 MAIN ASSY(8/8)_CARD BLOCK

SEMICONDUCTORS

IC2502 TC74VHCT126AFT
IC2503 TC7SZ126FU
Q2505 2SA1576A
Q2508,Q2509 2SC2411K
Q2521 2SC4081

Q2506,Q2507,Q2520 DTA124EUA
Q2503,Q2512,Q2522 DTC124EUA
Q2501,Q2502,Q2513 UMD2N
D2503,D2504 PDZ5.6B
D2501 UDZS3.6B

CAPACITORS

C2519,C2521 CCSRCH151J50
C2523,C2526,C2527,C2529 CCSRCH221J50
C2525,C2530 CCSRCH330J50
C2507,C2508 CKSRYB102K50
C2501 CKSRYB103K50

C2502 CKSRYB471K50
C2504,C2518,C2520 CKSRYF104Z16
C2510,C2511 CKSRYF224Z16

RESISTORS

R2507 RD1/2VM3R3J
R2530,R2531 RS1/10S331J
R2517,R2518 RS1/10S471J
Other Resistors RS1/16S□□□J

OTHERS

CN2501 12P FFC Connector 9604S-12C

B FRONT ASSY

SEMICONDUCTORS

D8001 BEL1037

SWITCHES AND RELAYS

S8001-S8004 ASG1034

RESISTORS

R8001 (27kΩ/1/2W) BCN1056

OTHERS

M8001 Remote Sensor Unit BXX1026

Mark No.	Description	Part No.
CN8001	19P FFC Connector	9607S-19F

6. ADJUSTMENT

There is no information to be shown in this chapter.

C CARD ASSY

CAPACITORS

C8501-C8504	CKCYF103Z50
-------------	-------------

RESISTORS

R8501,R8502 (100Ω/1/4W)	BCN1057
-------------------------	---------

OTHERS

CN8503	12P FFC Connector	9604S-12F
CN8501,CN8502	8P Card Connector	BKP1176

D MODEM ASSY

SEMICONDUCTORS

△ IC6103	PS2533-1
IC6101	TL431CLP
△ IC6102	TLP421D4(GR)
Q6101	2SC4081
Q6102,Q6103	2SC4793
D6101	PTZ43A
D6102	S1ZB60-4101
△ VA6101	2322 593 01316

COILS AND FILTERS

△ T6101	Line Trans	BTX1035
L6101,L6102		DTL1038

CAPACITORS

△ C6106,C6107 (470PAC250V)	BCG1026
C6103,C6104	CEHAT100M50
C6102	CKSRYB273K16
C6101	CKSRYB333K25

RESISTORS

R6104 (47Ω/1/2W)	BCN1063
R6103,R6105 (15Ω/1/2W)	BCN1066
Other Resistors	RS1/16S□□□J

OTHERS

△ CN6102	4P Modular Jack	BKP1137
CN6101	7P Socket	BKP1178

E POWER ASSY

This ASSY has no service part as a assy part.
Only the fuse(1102:REK1102) is the service part as
a set part. Refer to page 9.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 CHECK MODE

From the 7th generation IRD the service test software is not downloaded via the parallel port anymore, the software is resident in the 16 Mbit Dual Bank Memory.

For ckecking the IRD, enter to the check mode as following.

- **How to Enter to the Check Mode** : By grounding test pin K7003, turn on the power.
- **How to Exit from the Check Mode** : By disconnecting short cable from K7003, turn on the power again.

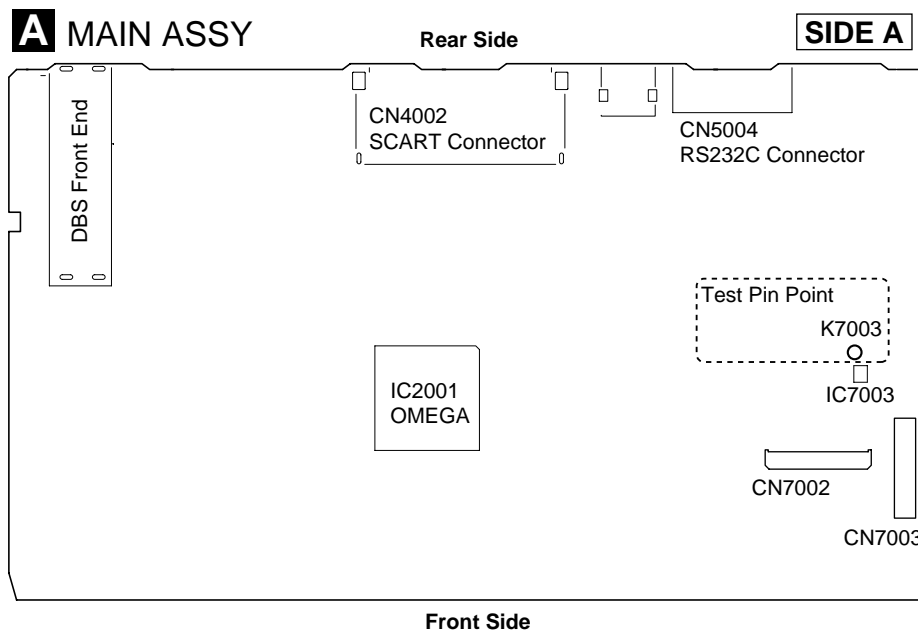


Fig.1 Test Pin Loaction

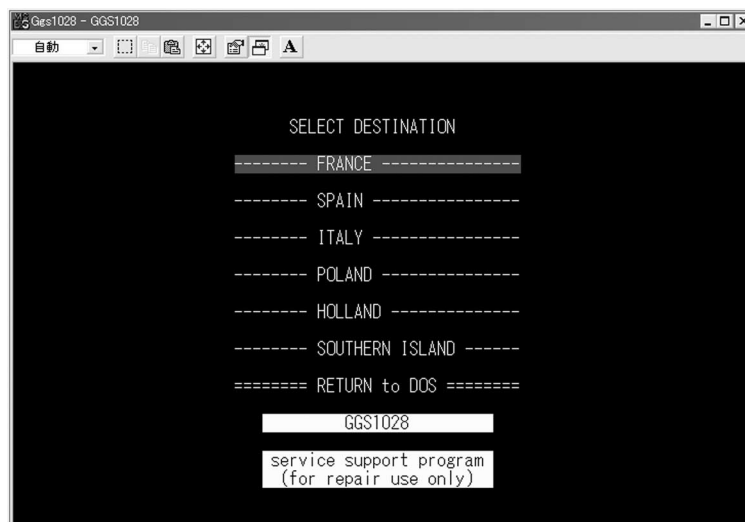
■ STARTING AND OPERATING THE COMMUNICATION CHECK SOFTWARE GGS1028

PC Operation Environment

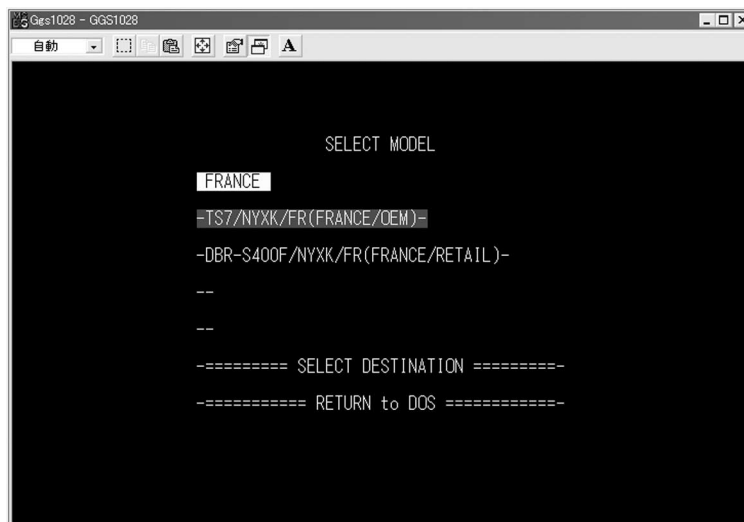
DOS/V machine OS : MS-DOS

Execution program : GGS1028.exe

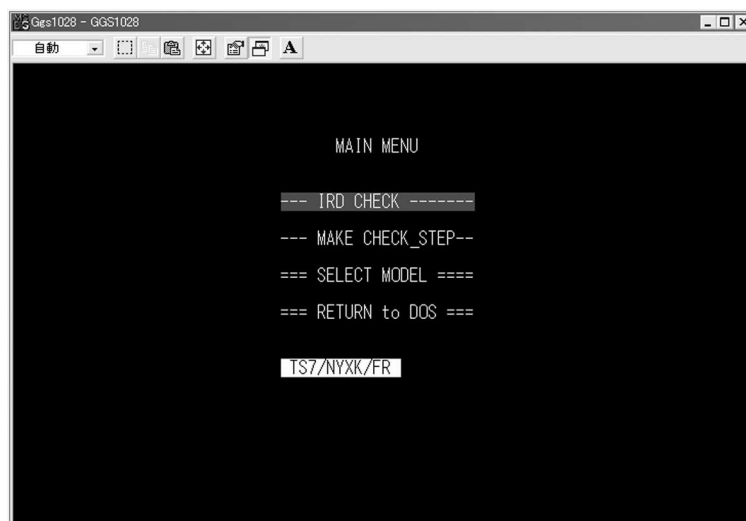
When the GGS1028.exe is started, the following initial screen is displayed.



Select the suitable destination with the cursor, and press the Return key. The following screen will be displayed.

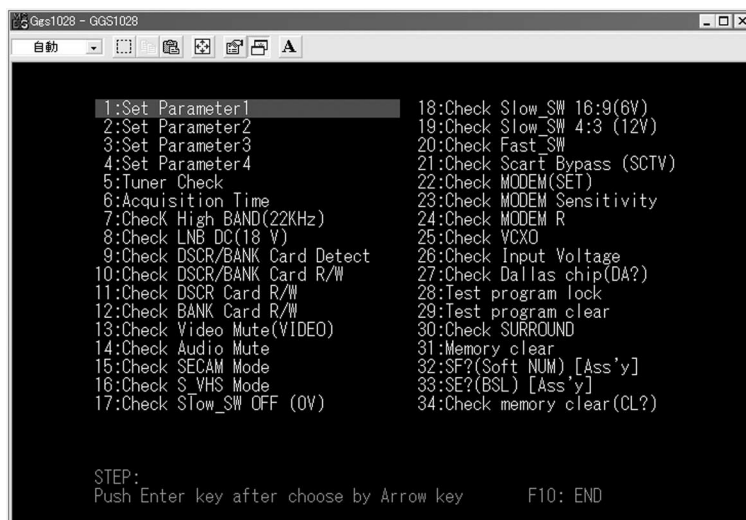
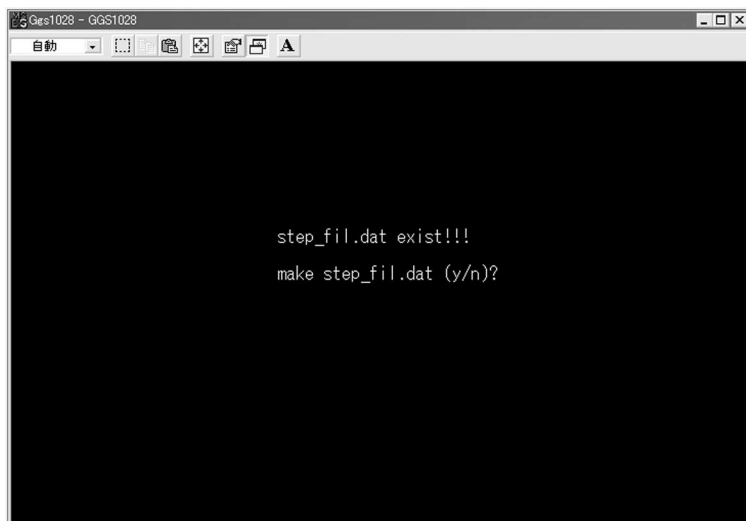


Select the suitable model with the cursor, and press the Return key. The following screen will be displayed.



Select MAKE_CHECK_STEP with the cursor, and press the Return key.

The following screen will be displayed. When the message: "step_fil.dat exist!!!" is displayed, press "y" to overwrite the file.



Press the "F10" key after inputting the command number(s) to be transmitted to the IRD.

After returning to the initial screen, select "IRD CHECK" with the cursor key and press the Return key.

The screen for executing the command will be displayed. Pressing the Return key will execute the command selected at "MAKE CHECK_STEP".

The following table shows a list of commands and their functions.

*1 : Functionalities which you can only check with the check_step file

*2 : Functionality which you can check more easily with the "IRD State Window F5" or with the normal IRD application menu

*3 : Command that is only used in production and by R&D

No.	Command	Function	Remarks
1	Set Parameter1	Transmits the command used for setting the parameters required for IRD tuning signals. (To set parameters, press the function key F1 at the IRD Check Mode Screen.)	*1
2	Set Parameter2	Same as above except the use of function key F2.	
3	Set Parameter3	Same as above except the use of function key F3.	
4	Set Parameter4	Same as above except the use of function key F4.	
5	Tuner Check	Used to check if the Tuner Bit Error Rate is OK or not at limited MPEG stream signal. OK: Bit Error rate OK, NG: Bit Error rate NG.	
6	Acquisition Time	Command that is only used in production and by R&D for hardware check (Measuring time of Tuning or Scanning)	*3
7	Check High BAND (22KHz)	Checks the oscillation circuit in the IRD.	*2
8	Check LNB DC (18 V)	Check LNB power supply voltage.	
9	Check DSCR/BANK Card	Checks the DETECT terminal of the DSCR Card and BANK Card.	*1
10	Check DSCR/BANK Card R/W	Check both the No.10 and No.11 command function.	
11	Check DSCR Card R/W	Check used to check if the DSCR Card is present and to check the communication with the main microprocessor. OK: Communication check OK. NG: Communication check	
12	Check BANK Card R/W	Used to check if the Bank Card is present and to check the communication with the main microprocessor. OK: Communication check OK. NG: Communication check NG.	
13	Check Video Mute (VIDEO)	Mutes composite video output (Recovers after 2 seconds).	*2
14	Check Audio Mute	Mutes all audio outputs (TV_SCART, RCA) (Recovers after 2 seconds).	
15	Check SECAM Mode	Switches the video output to SECAM.	
16	Check S_VHS Mode	Switches the video output to Y/C separation output. Also switches the video output to	
17	Check Slow_SW OFF (0V)	Sets the SLOW_SW (16:9/4:3 discrimination signal) to OFF (Low Level).	*1
18	Check Slow_SW 16:9 (6V)	Sets the SLOW_SW to 16:9.	
19	Check Slow_SW 4:3 (12V)	Sets the SLOW_SW to 4:3.	
20	Check Fast_SW	Sets the FAST_SW (RGB/Video switching signal) to ON (High Level).	
21	Check Scart Bypass (SCTV)	Switches the SCART mode 5, 2, 4 and 1. (Refer to the very next page Fig 2)	*3
22	Check MODEM (SET)	Command to check the communication between the MODEM of the IRD and an external MODEM, which is connected to the PC that runs the service program. OK: Communication check is OK, NG: Communication check is NG * Use the DC OFFSET JIG to get the correct line voltage	
23	Check MODEM Sensitivity	Command that is used by R&D	*1
24	Check MODEM R	Command to check the communication between the Omega IC and the Modem Controller	*3
25	Check VCXO	Command which is not used anymore, only for older models	*1
26	Check Input Voltage	Checks the tuner AGC voltage and the external SLOW_SW input voltage. OK: Both checks are OK, NG: Both checks are NG. * for the Slow SW input voltage check, 6V or 12V has to be applied from outside.	

No.	Command	Function	Remarks
27	Check Dallas Chip (DA?)	Check the information inside the Dallas chip	*1
28	Test Program lock	Command to lock the IRD in test mode. After a restart the IRD will go back in the service mode.	
29	Test Program Clear	Command to unlock the IRD. After a restart the IRD will go back to the normal application mode	
30	Check Surround	Not used, use the Surround option from the F5 window to check the surround sound.	*3
31	Memory Clear	Command that is only used in production	
32	SF? (Soft NUM) [Ass'y]	Command that is only used in production	
33	SE? (BSL) [Ass'y]	Command that is only used in production	
34	Check memory clear (CL?)	Command to check if the E_PROM is correctly initialized	

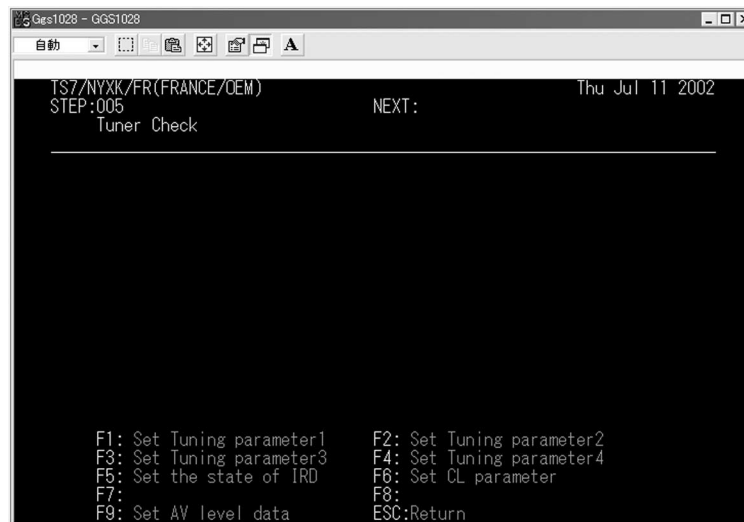
TV VCR SCART TEST

	TV SCART output	RCA audio output	VCR SCART output
Mode1	1 VCR output	VCR output	TV output
Mode2	VCR output	VCR output	MPEG A/V output
Mode3	MPEG A/V output	MPEG Audio output	Mute
Mode4	VCR output	VCR output	Mute

Outline of the IRD Check on the Main Menu

Select IRD CHECK on the MAIN MENU, and press the RETURN key.

The following screen will be displayed.



The command selected at "MAKE CHECK_STEP" will be displayed onto "STEP: * * *".

Pressing the RETURN key at this screen will transmit the selected command to the IRD.

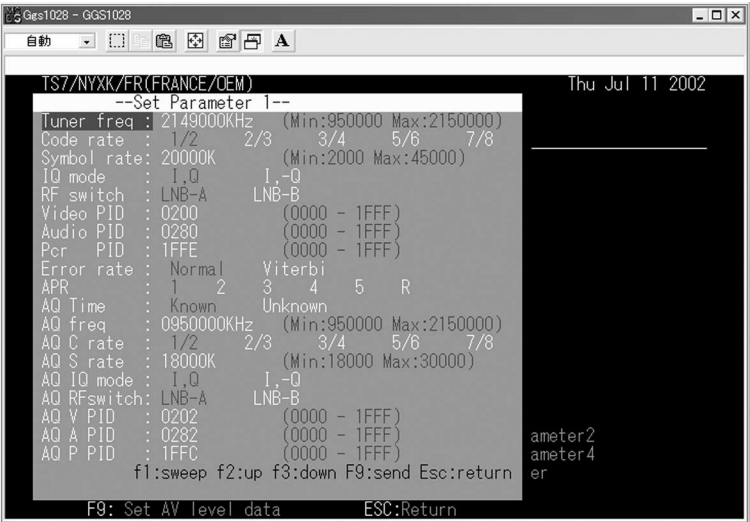
If the IRD operates normally for the transmitted command, "OK" will be displayed.

If a problem exists, NG will be displayed.

Function keys

Set Parameter (F1) : Sets the parameters of the received signal.

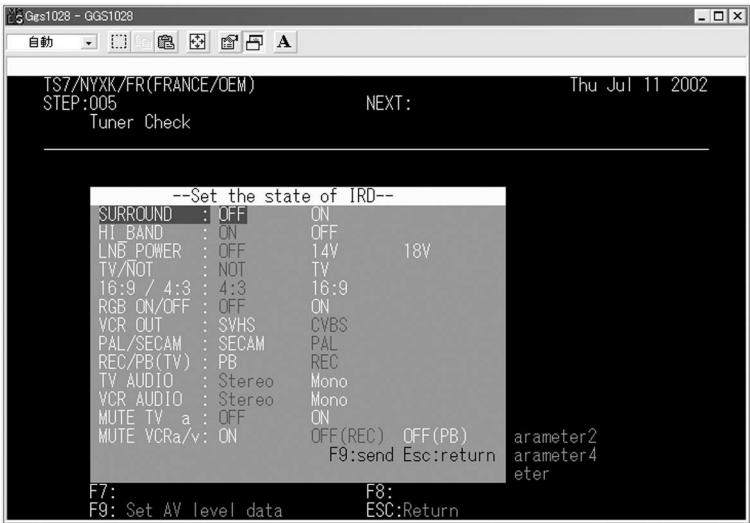
Example



After completion of all settings, the data can be transmitted to the IRD with the “F9” key.

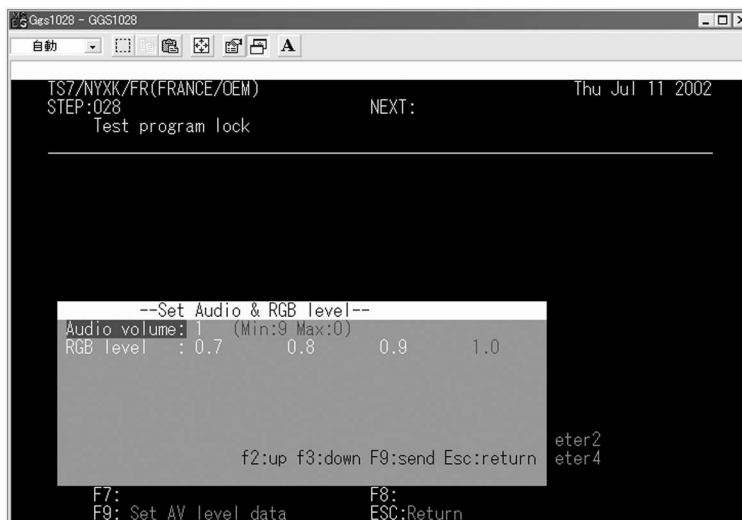
Set the state of IRD (F5)

Example



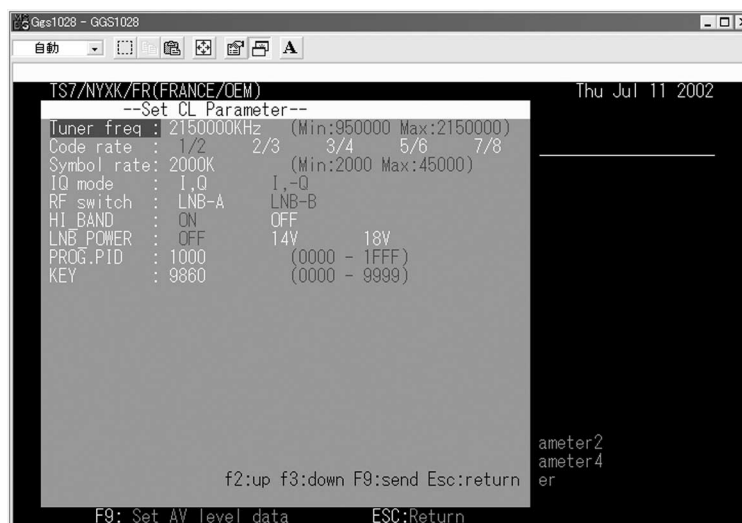
After completion of all settings, the data can be transmitted to the IRD with the “F9” key.

Set AV level data (F9) : Used to control the Audio volume and RGB level.



After completion of all settings, the data can be transmitted to the IRD with the “F9” key.

Set CL Parameter (F6) : Sets the parameters of the Memory Clear



After completion of all settings, the data can be transmitted to the IRD with the “F9” key.

FINISHING SERVICE SOFTWARE – CLEARING TEST PROGRAM

Test mode is not locked:

Disconnect the power cable (no power switch available) and reconnect it, the IRD will return to the normal application mode.

Test Mode is locked:

1. Operate the test software (do not short the test pin).
2. Select MAKE_CHECK_STEP with the cursor, and press the RETURN key.
3. In the menu, select the command “29: Test Program clear” and press the RETURN key.
4. Press the F10 key to end the setting.
5. Select IRD CHECK from the main menu, and press the RETURN key.
6. Press the RETURN key to send the unlock command to the IRD.
7. Disconnect the power cable and re-connect it, the IRD will return to the normal application mode.

7.1.2 TROUBLESHOOTING

Prolgue

Before entering into repairing stages, we recommend you to make confirmations as following;

1) This flow chart doesn't describe simple defections as below.

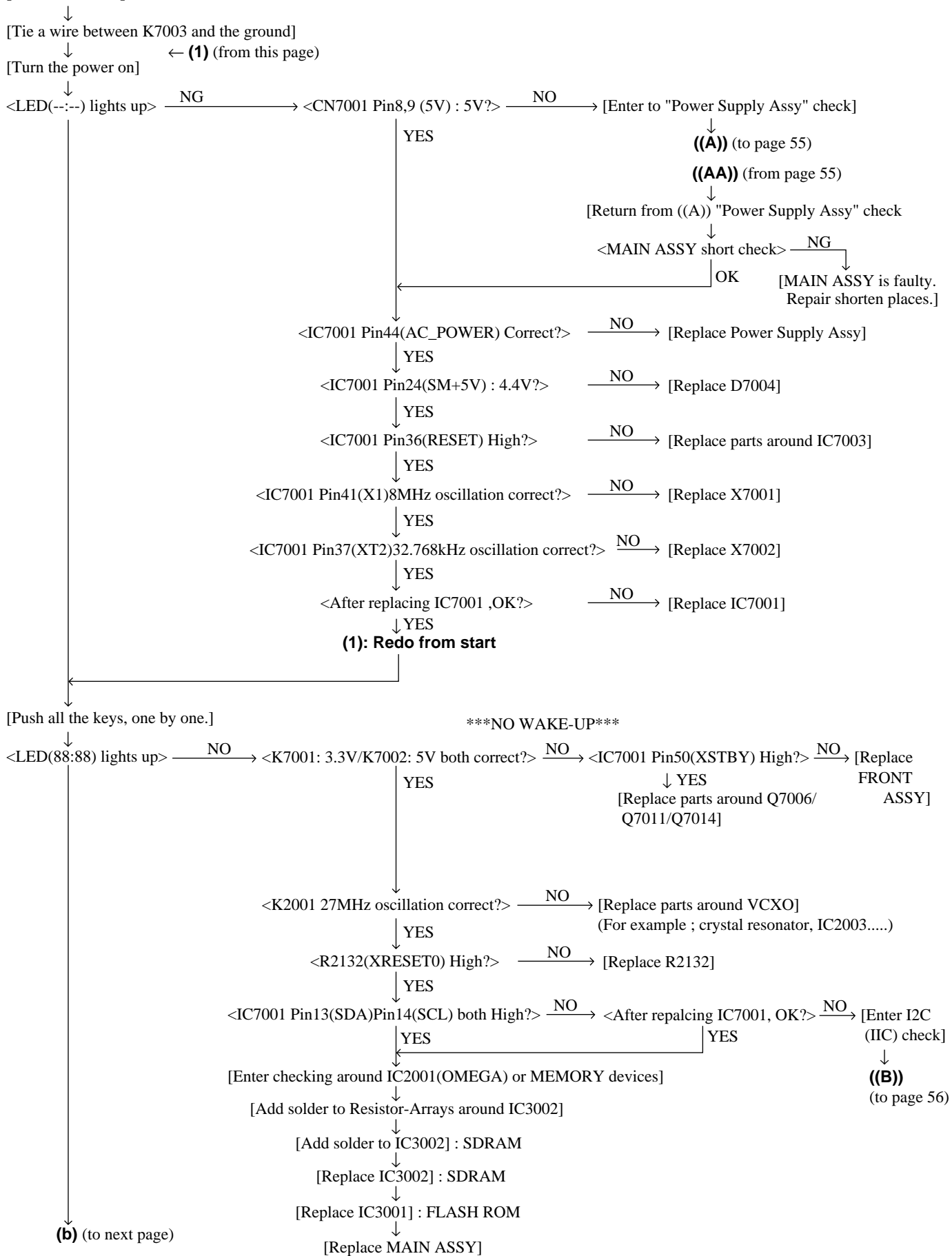
So check them before you starting ;

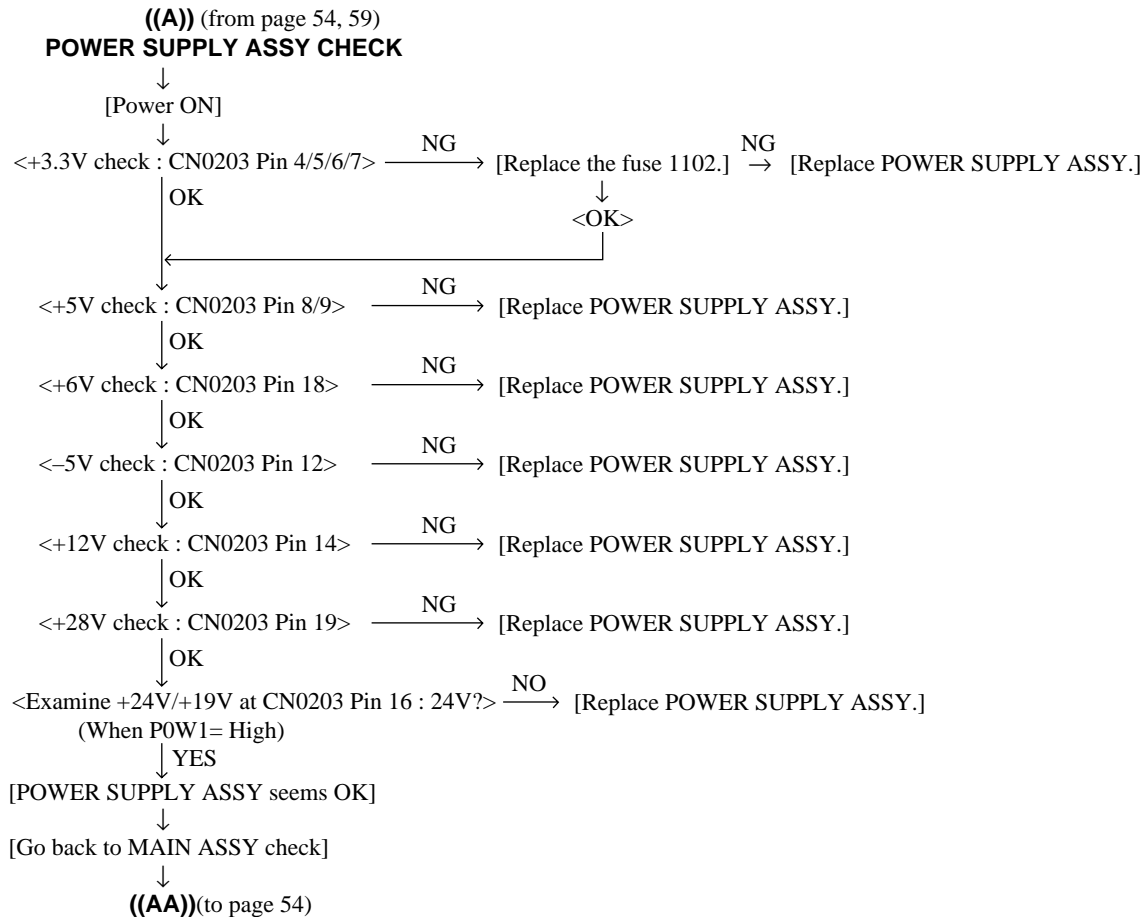
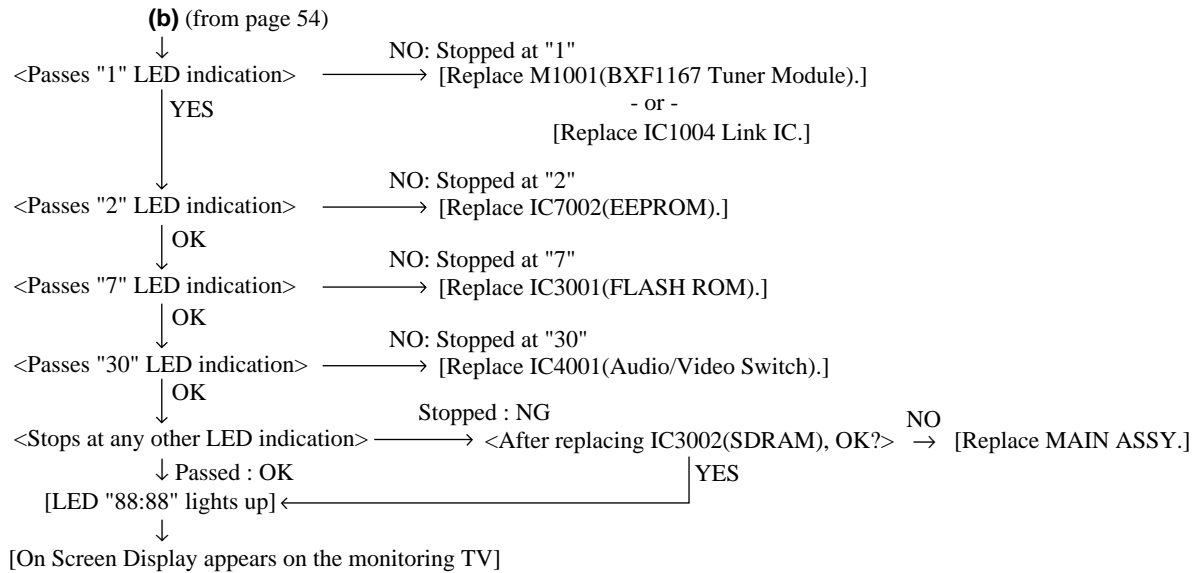
- * Whether push-switch(s) is(are) broken.
- * Whether connector plug(s) or socket(s) get(s) out of place(s).
- * Whether there are poor contacts of the wire(s).

2) Generally, the IRD may have ;

- * Soldering defections made by the mechanical stresses.
- * Devices failures which show an evident change of their colour.

[TS7 REPAIRS]





A

((B)) (from page 54, 58)
IIC_BUS CHECK

↓
 [Add solder to the contacts : R7011/R7012] OK
 (See bottom side of IC7002 (EEPROM))

↓
 [Add solder to IC7001 (PE5325 SubCPU) Pin13/14.]

↓
 [Add solder to IC7002 (EEPROM) Pin5/6.]

↓
 [Add solder to IC4001 (CXA2161R A/V Switch) Pin34/35.]

B

↓
 [Replace IC7002 (EEPROM).]

↓
 [Replace IC7001 (PE5325 SubCPU).]

↓
 [Replace IC4001 (CXA2161R A/V Switch).]

↓
 [Replace M1001 (BXF1167 Tuner Module) or IC1004 (Link IC).]

↓
 [Replace MAIN ASSY.]

C

[Communication Block Repairs]

↓
 [Connect the PC and setup "main.exe" environment.]

Serial communication check : ↓

[Execute any "Set parameter" operation.]

(In the "main.exe" Window, push f1 key then f9 key.)

↓
 <Finished correctly?> —NO→ [Replace IC5006(HIN211CA RS232C drivers).]

YES

↓
 <Serial communication check> —NG→ [Trace the Serial communication line.]

OK

MODEM check :

[Execute "No.22 : Check MODEM(SET)" operation.]

↓
 <Finished correctly?> —NO→ **((C)) (to page 57)**

YES

CARD check :

[Execute "No.11 Bank Card R/W CHECK" operation.]

or [Execute "No.10 DSCR Card R/W CHECK" operation.]

↓
 <Finished correctly?> —NO→ [Replace CARD ASSY.] —NG→ [Around 14.2848MHz CARD_CLK.]

YES

↓
 <Card check>

↓
 [After checking the line, Replace MAIN ASSY.]

OK

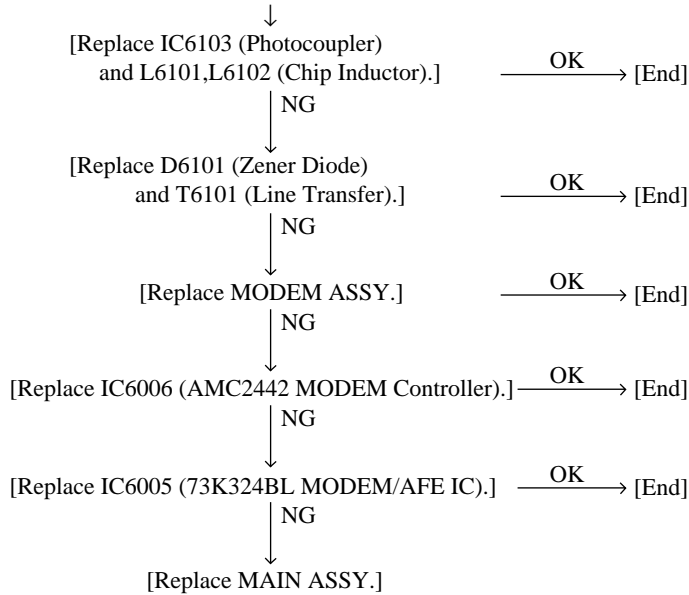
↓
 [End]

D

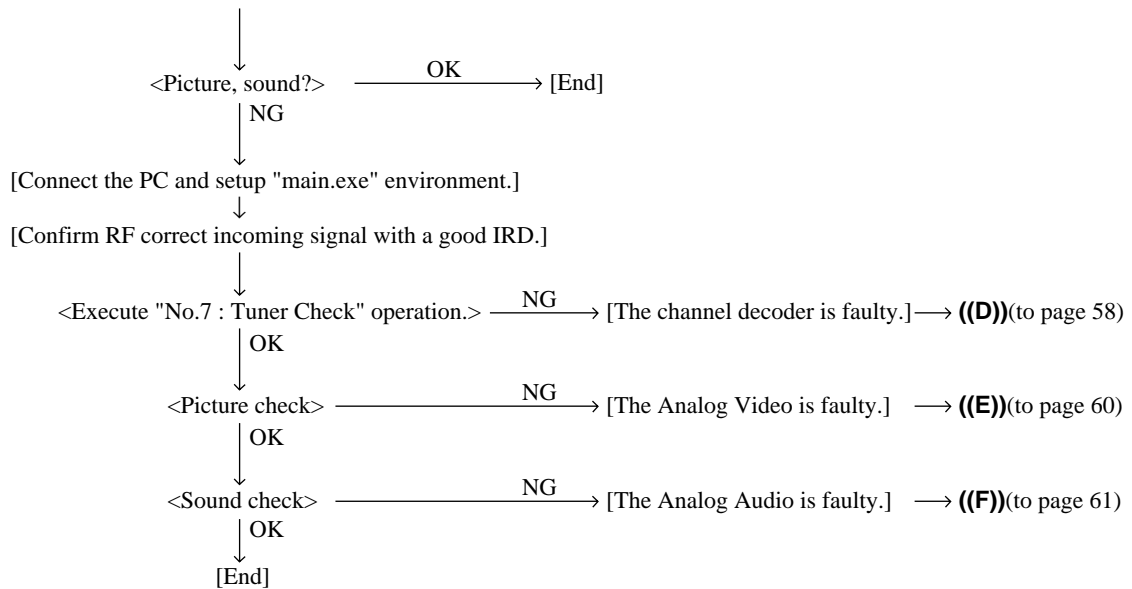
E

F

((C)) (from page 56)
[INDIVIDUAL MODEM REPAIRS]

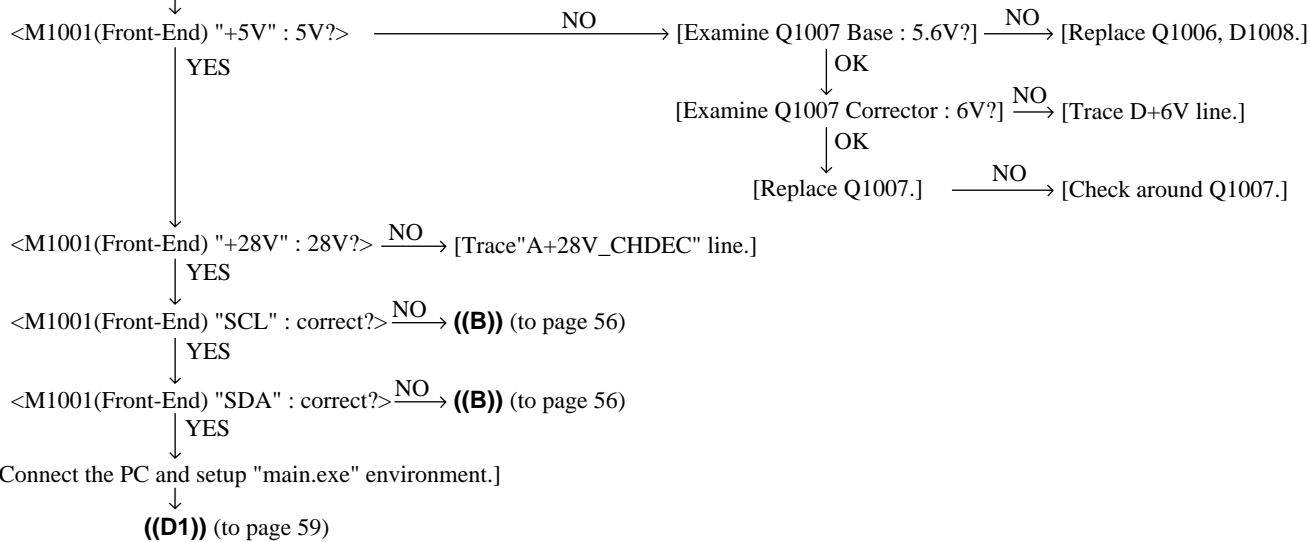


[Analog Video, Analog Audio, Tuner Receiving Checks]

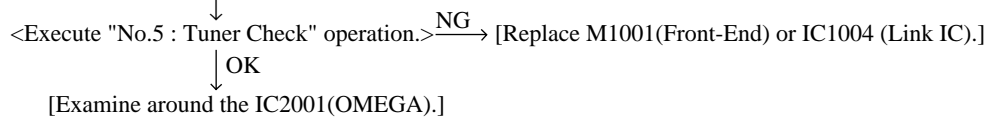


[Channel Decoder section]

((D)) (from page 57)



((D2)) (from page 59)



M1001 Pin List

Pin	Name
1	-
2	LNB POWER (RF Input)
3	-
4	-
5	-
6	AGC Input
7	Q
8	I
9	+5V
10	-
11	+28V
12	-
13	-
14	SDA
15	SCL

((D1)) (from page 58)
[LNB Power Check Routine]

<In the "main.exe" Window, push F5 key>

[Examine M1001(LNB POWER (RF INPUT).)]

<13V(12.5V~14V) or 18V (17V~19V) ?> **NO** → <LNB_Off/On at Q1008 Base: 0.7V?> **NO** → [Replace IC1004(STV0299B).]

YES

YES → <IC1001(KA317MRTM Voltage Regulator) output : 13V or 18V?> **NO** → <IC1001(KA317MRTM Voltage Regulator) Pin 3 (VIN) : available?>

YES → [Replace Q1008 or Q1011]

NO → **((A))** (to page 55)

YES

[IC1001(KA317MRTM Voltage Regulator)
Pin 2 (VOUT) and Pin 1 (ADJ)]

<IC1001 : voltage difference (Vout-Vadj): 1.25V?>

NO → <Over-current sensing: OK? (Around Q1002)>

YES

[Replace IC1001.]

YES

[RF incoming signal is faulty.(Antenna line seems to have a short path to the ground.)]

[Add solder to R1009-R1013/R1033.]

<13V and 18V are switched correctly?> **NO** → <A+22V or 17V input available?> **NO** → [Replace POWER SUPPLY ASSY.]

YES

YES

<LNB_V_H at Q1004 Pin5 : High?> **NO** → [Replace IC1004(STV0299B).]

YES

[Replace Q1004]

[Examine 22kHz (High Band/ Low Band switching signal.)]

<Correctly overlayed onto 13V or 18V?> **NO** → <22kHz available at IC1004 Pin 16?> **NO** → [Replace IC1004(STV0299B).]

YES

YES

[Execute any "Set parameter" operation.]

(In the "main.exe" Window, push f1 key then f9 key.)

[Replace Q1003]

[Execute "No.5 : Tuner Check" operation.]

((D2)) (to page 58)

[Analog Video Section]
((E)) (from page 57)

[The CVBS(PAL/SECAM) output is faulty.]

[Examine IC4001(CXA2161R: A/V Switch) CVBS input]
 (C4049*/IC4001 : Pin 54 : CVBS)

*See bottom side

<Composite video signal : correct?> $\xrightarrow{\text{NG}}$ [Replace MAIN ASSY.]

\downarrow OK

[Examine IC4001(CXA2161R: A/V Switch) CVBS output]
 (IC4001: Pin43: TV CVBS_OUT, IC4001: Pin39: VCR_CVBS_OUT)

<How is the result?> $\xrightarrow{\text{NG}}$ [Replace IC4001.]

\downarrow OK

[Around Analog video portion is faulty.]

[The Y/C output is faulty.]

[Examine IC4001(CXA2161R: A/V Switch) Y(CVBS)/C input]
 (C4047*/IC4001 : Pin 55 : Y, C4048*/IC4001 : Pin 53 : C)

*See bottom side

<How is the result?> $\xrightarrow{\text{NG}}$ [Replace MAIN ASSY.]

\downarrow OK

[Examine IC4001(CXA2161R: A/V Switch) Y/C output]
 (IC4001: Pin39: Y_OUT, IC4001: Pin41: C_OUT)

<How is the result?> $\xrightarrow{\text{NG}}$ [Replace IC4001.]

\downarrow OK

[Around Analog video portion is faulty.]

[The RGB output is faulty.]

[Examine IC4001(CXA2161R: A/V Switch) RGB input]
 (IC4001 : Pin 52 : R, IC4001 : Pin 51 : G, IC4001 : Pin 50 : B)

<Are they OK?> $\xrightarrow{\text{NG}}$ [Replace MAIN ASSY.]

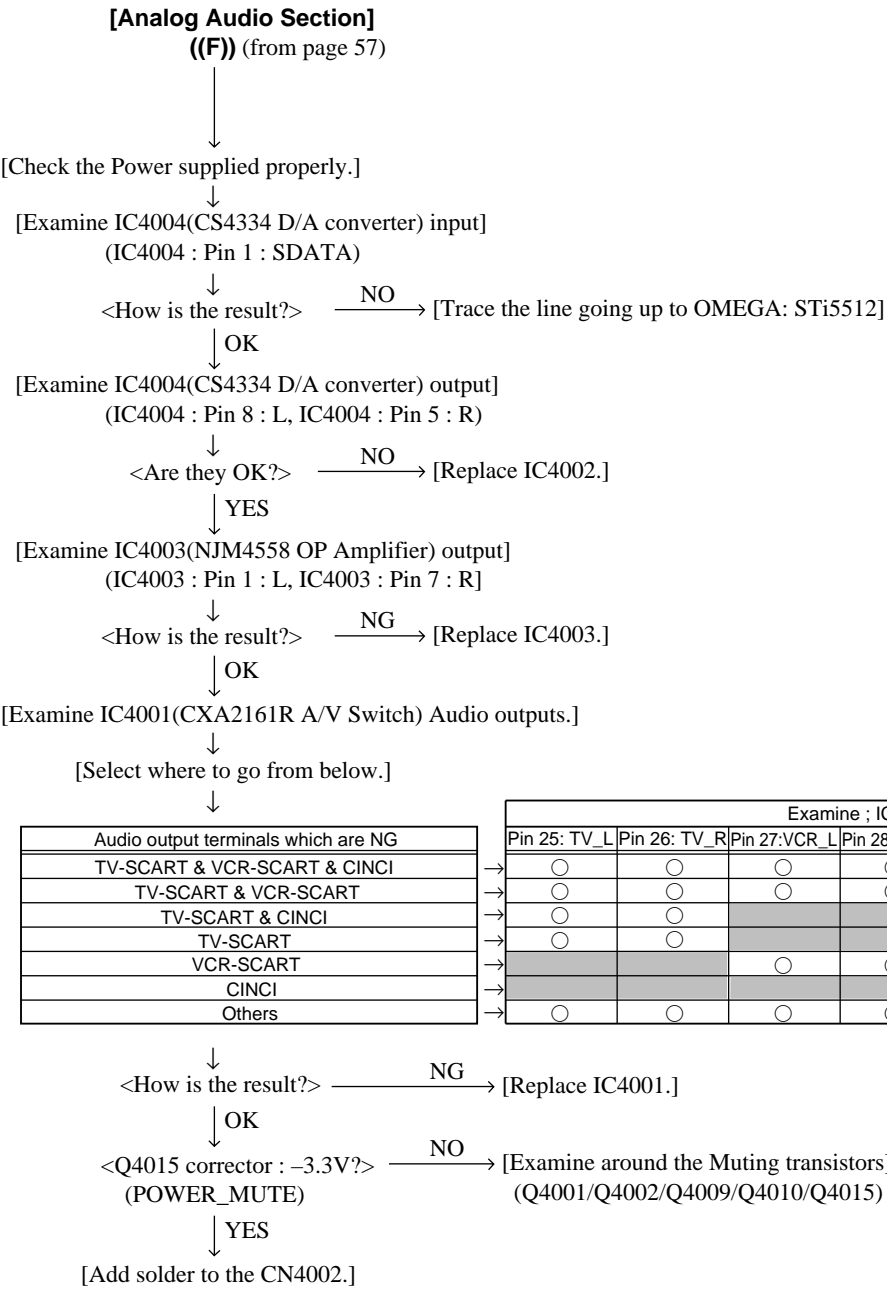
\downarrow YES

[Examine IC4001(CXA2161R: A/V Switch) RGB output]
 (IC4001: Pin45: R, IC4001: Pin46: G, IC4001: Pin47: B)

<How is the result?> $\xrightarrow{\text{NG}}$ [Replace IC4001.]

\downarrow OK

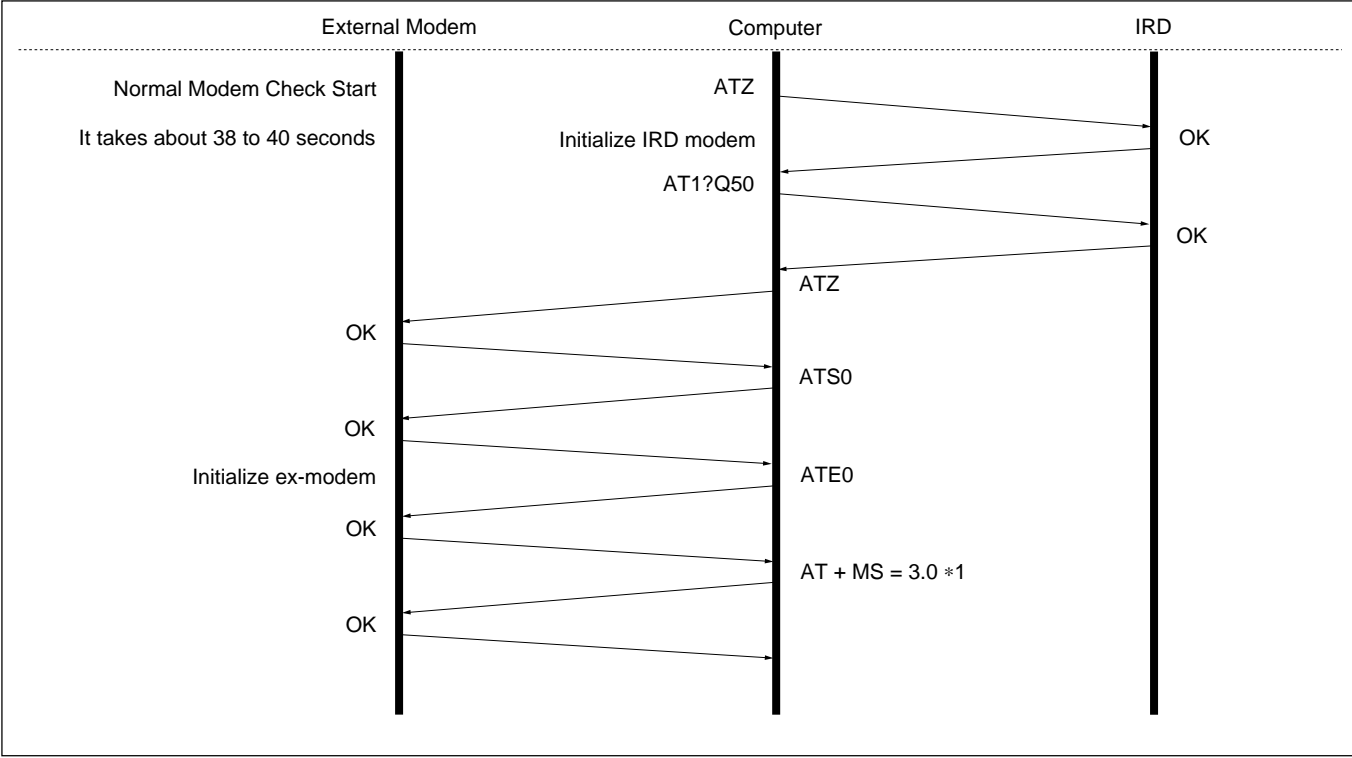
[Around Analog video portion is faulty.]



A

■ **Appendix.**
MODEM Check Sequence
1. Initialization

(This is for 7TH generation)



B

C

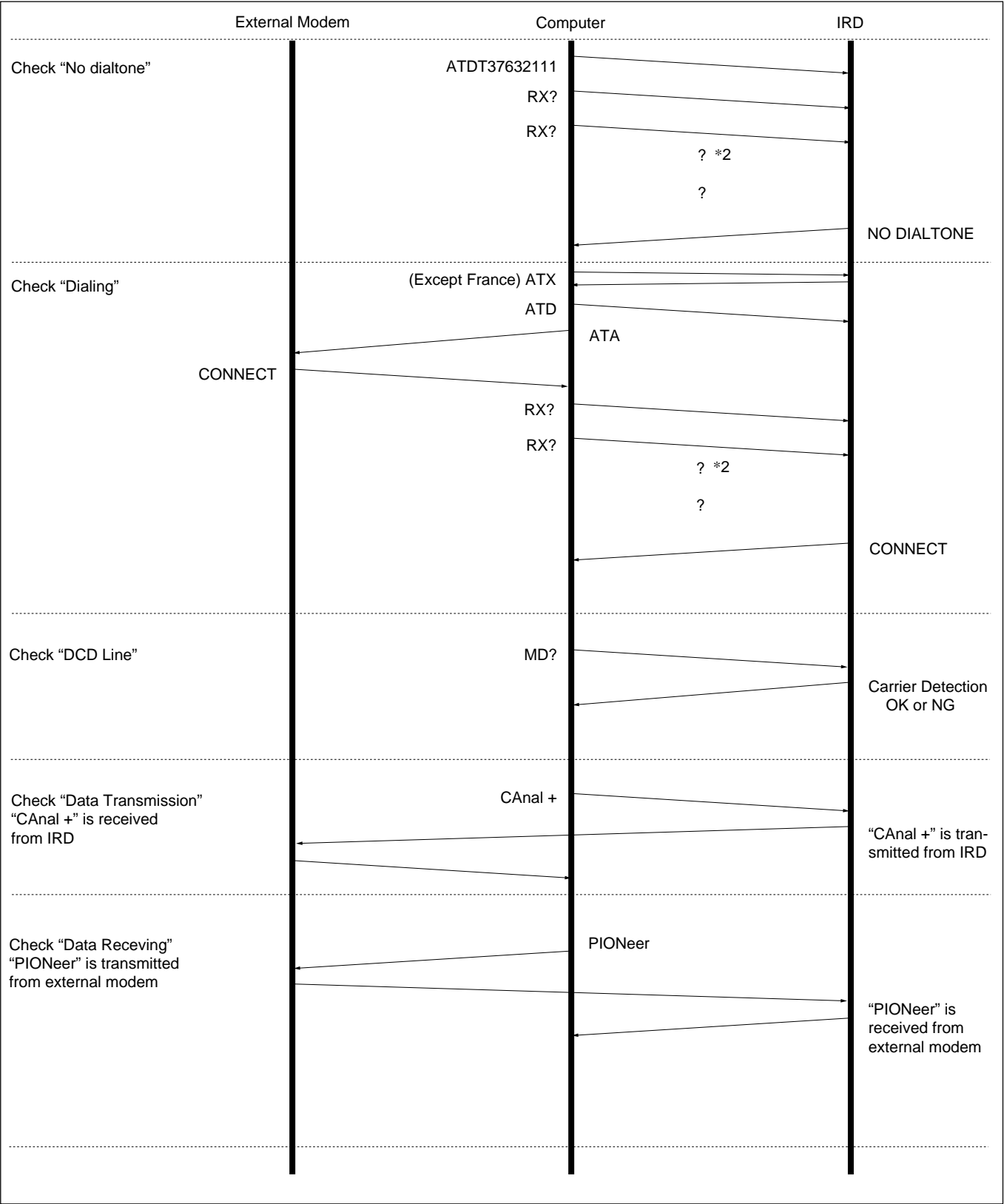
D

E

F

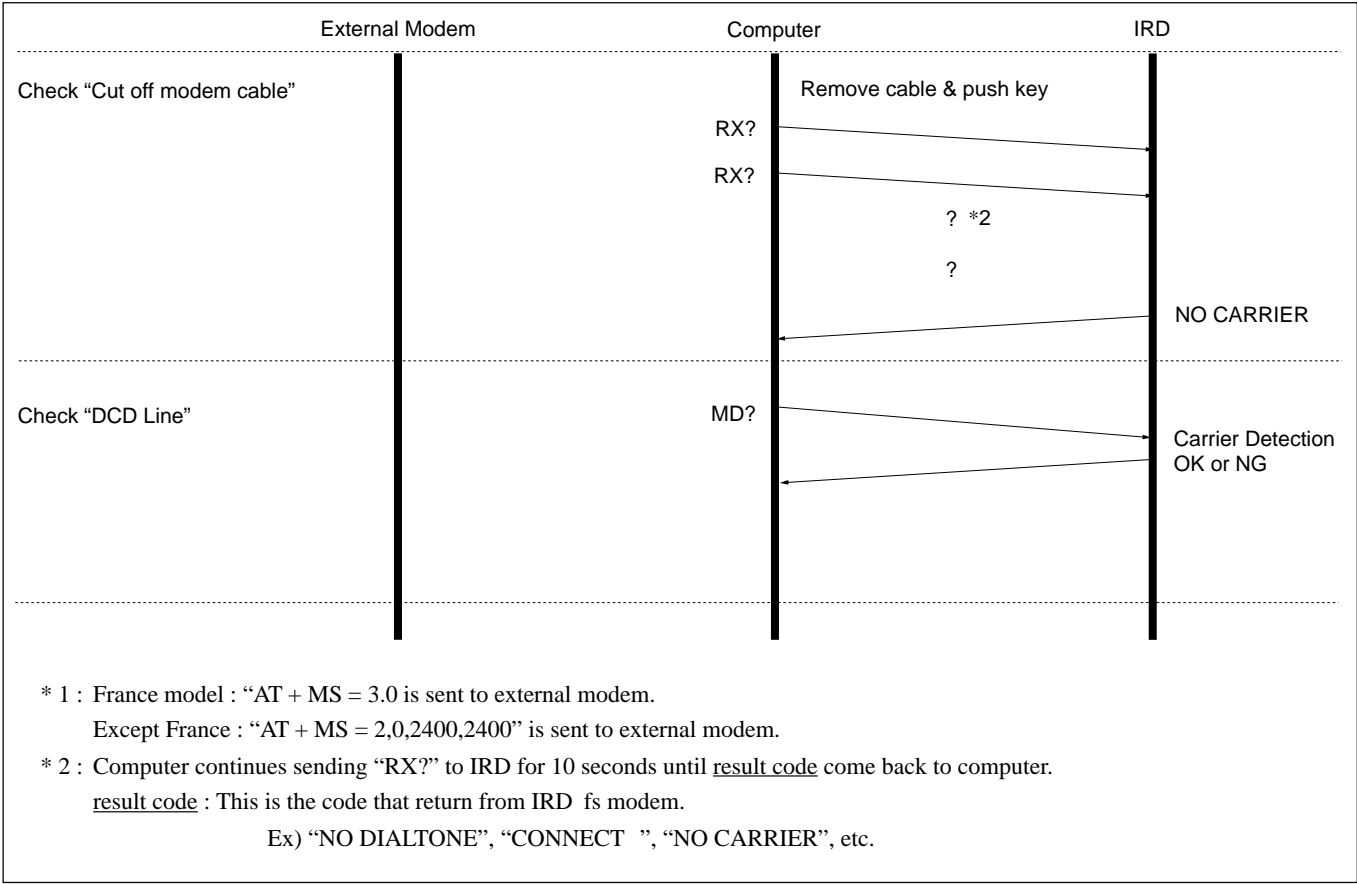
2. Dialing, Transmission & Receiving

(This is for 7TH generation)



3. Cut off detect confirmation

(This is for 7TH generation)



7.2 IC

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● List of IC

STV0299B

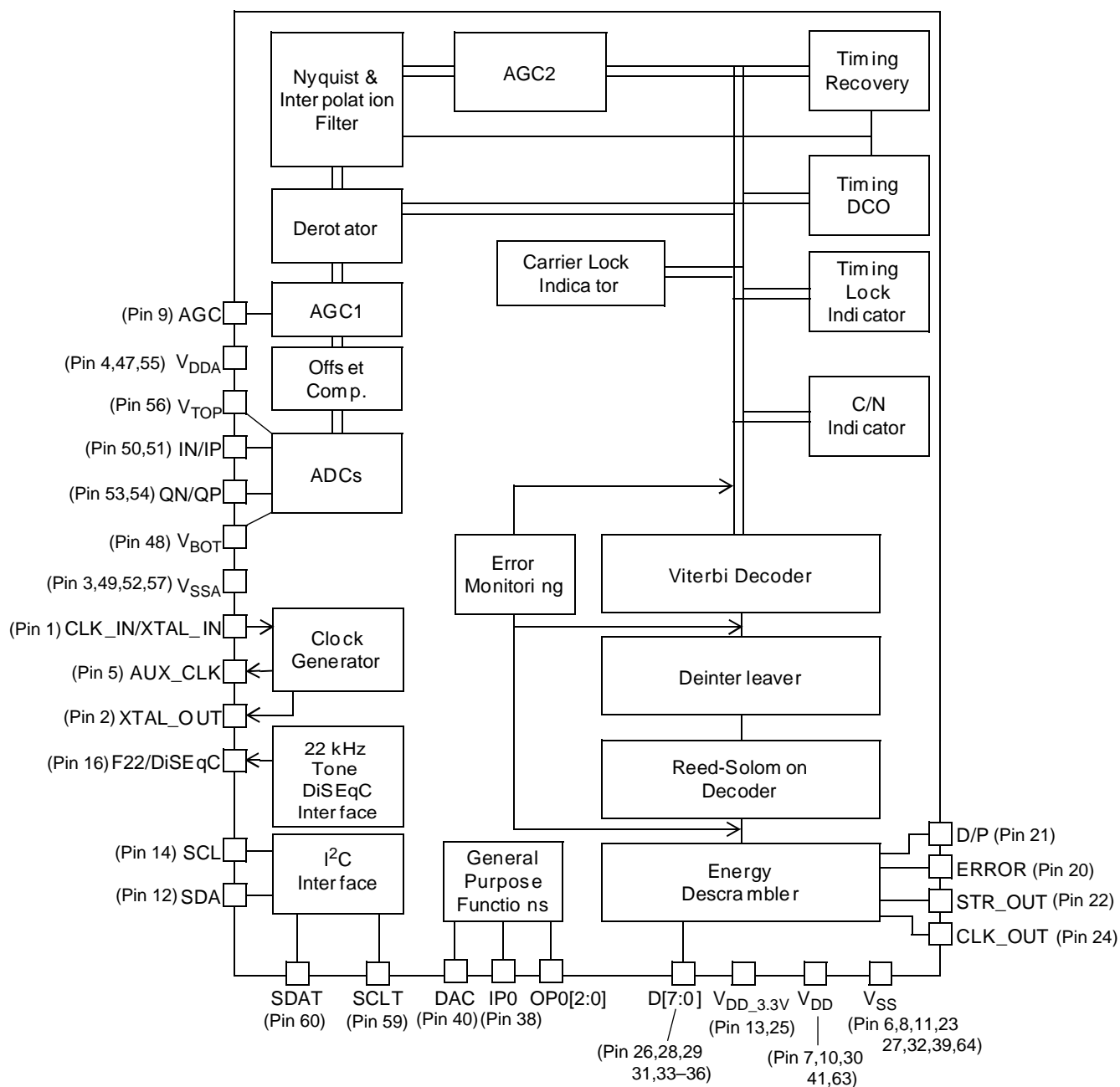
CS4334-KS

HIN211CA

■ STV0299B (MAIN ASSY(1/8) : IC1004)

- **QPSK Link IC**

- Block Diagram



● Pin Function

Pin Number	Name	I/O ¹	Description
SIGNAL INPUTS			
50, 51	IP, IN	I	Analog in Phase Component
53, 54	QN, QP	I	Analog in Quadrature Component
FRONT END CONTROLS			
1	CLK_IN/XTAL IN	I	Crystal Input or CLK_IN
2	XTAL OUT	O	Crystal Output
9	AGC	OD ³	Control Signal to the Tuner
5	AUX_CLK	O ²	Programmable Output Port or Programmable Output Clock
17-18	OP0, OP1	O ²	Programmable Output Ports
19	LOCK/OP2	O ²	Carrier Found or Data Found or Output Port
38	IP0	I	Input Port
SIGNAL OUPUTS			
26-28-29-31, 33 to 36	D[7:0]	O ²	Output Data; D7 is DATA_OUT in Serial Mode
24	CLK_OUT	O ²	Output Byte Clock; or Bit Clock in Serial Mode
22	STR_OUT	O ²	Output 1st byte Signal (synchro byte clock)
21	D/ \overline{P}	O ²	Data/Parity Signal
20	ERROR	O ²	Output Error Signal. Set in case of uncorrectible packet.
I²C INTERFACE			
14	SCL	I ³	Serial Clock (I ² C bus)
12	SDA	I/OD ³	Serial Data (I ² C bus)
OTHERS			
59	SCLT	OD ³	Tuner Serial Clock (repeater) or Output Port
60	SDAT	I/OD ³	Tuner Serial Data (repeater) or Input/Output Port
37-43-44-45-46-61-62	TEST	I	Reserved for manufacturing tests; must be tied to V _{SS}
58	DIRCLK_DIS	I	Sets the DIRCLK function at power on
3, 49, 52, 57	V _{SSA}	S	Analog Ground
4, 47, 55	V _{DDA}	S	Analog 2.5 V Supply
56	V _{TOP}	S	ADC High Voltage Reference
48	V _{BOT}	S	ADC Low Voltage Reference
6-8-11-23-27-32-39-64	V _{SS}	S	Ground
13-25	V _{DD,3.3 V}	S	3.3 V Supply
7-10-30-41-63	V _{DD}	S	2.5 V Supply
15	$\overline{\text{RESET}}$	I	Reset, active at low level
42	STDBY	I	Sets STDBY at power on
16	F22/DiSEqC	O ²	DiSEqC modulation, 22 kHz Tone, Programmable Output Port
40	DAC	O ²	Programmable Digital to Analog Converter Output

Note: 1 The following abbreviations are used: I - Input; O - Output; OD - Open drain output.

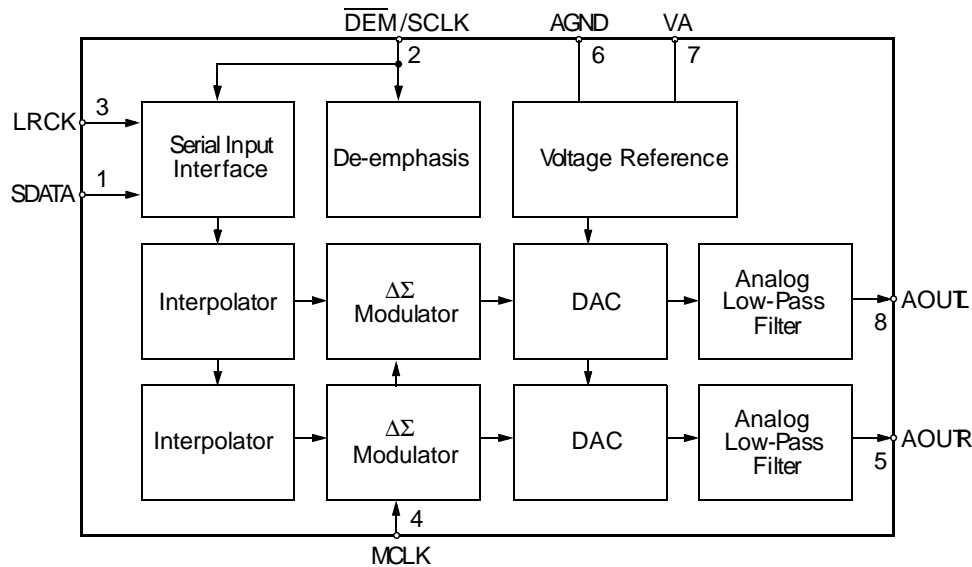
2 3.3 V output levels.

3 5 V tolerant

■ CS4334-KS (MAIN ASSY(4/8) : IC4004)

- DAC IC

- Block Diagram



- Pin Layout

SERIAL DATA INPUT	SDATA	1	8	AOUTL	ANALOG LEFT CHANNEL OUTPUT
DE-EMPHASIS / SCLK	DEM/SCLK	2	7	VA	ANALOG POWER
LEFT / RIGHT CLOCK	LRCK	3	6	AGND	ANALOG GROUND
MASTER CLOCK	MCLK	4	5	AOUTR	ANALOG RIGHT CHANNEL OUTPUT

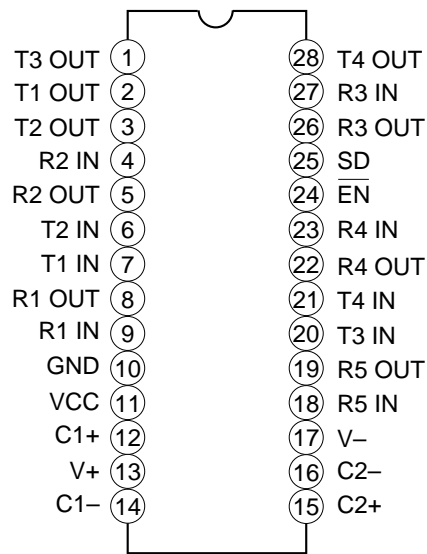
- Pin Function

No.	Pin Name	I/O	Pin Function and Description
1	SDATA	I	Serial Audio Data Input - two's complement MSB-first serial data is input on this pin. The data is clocked into the CS4334/5/6/7/8/9 via internal or external SCLK, and the channel is determined by LRCK.
2	DEM/SCLK	I	De-Emphasis/External Serial Clock Input - used for de-emphasis filter control or external serial clock input.
3	LRCK	I	Left/Right Clock - determines which channel is currently being input on the Audio Serial Data Input pin, SDATA.
4	MCLK	I	Master Clock - frequency must be 256x, 384x, or 512x the input sample rate in BRM and either 128x or 192x the input sample rate in HRM.
5	AOUTR	O	Analog Right Channel Output - typically 3.5 Vp-p for a full-scale input signal.
6	AGND	I	Analog Ground - analog ground reference is 0V.
7	VA	I	Analog Power - analog power supply is nominally +5V.
8	AOUTL	O	Analog Left Channel Output - typically 3.5 Vp-p for a full-scale input signal.

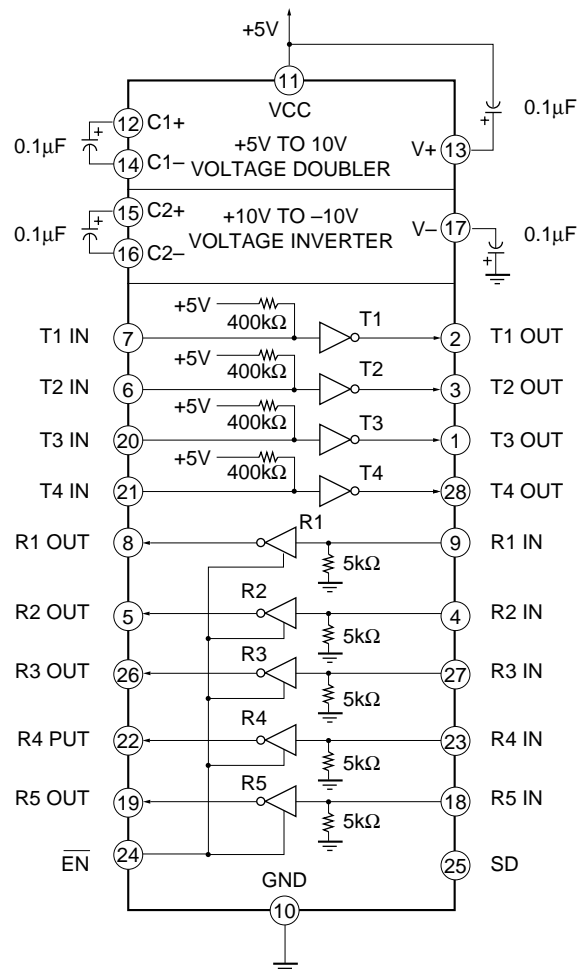
HIN211CA (MAIN ASSY(5/8) : IC5006)

• RS232C IC

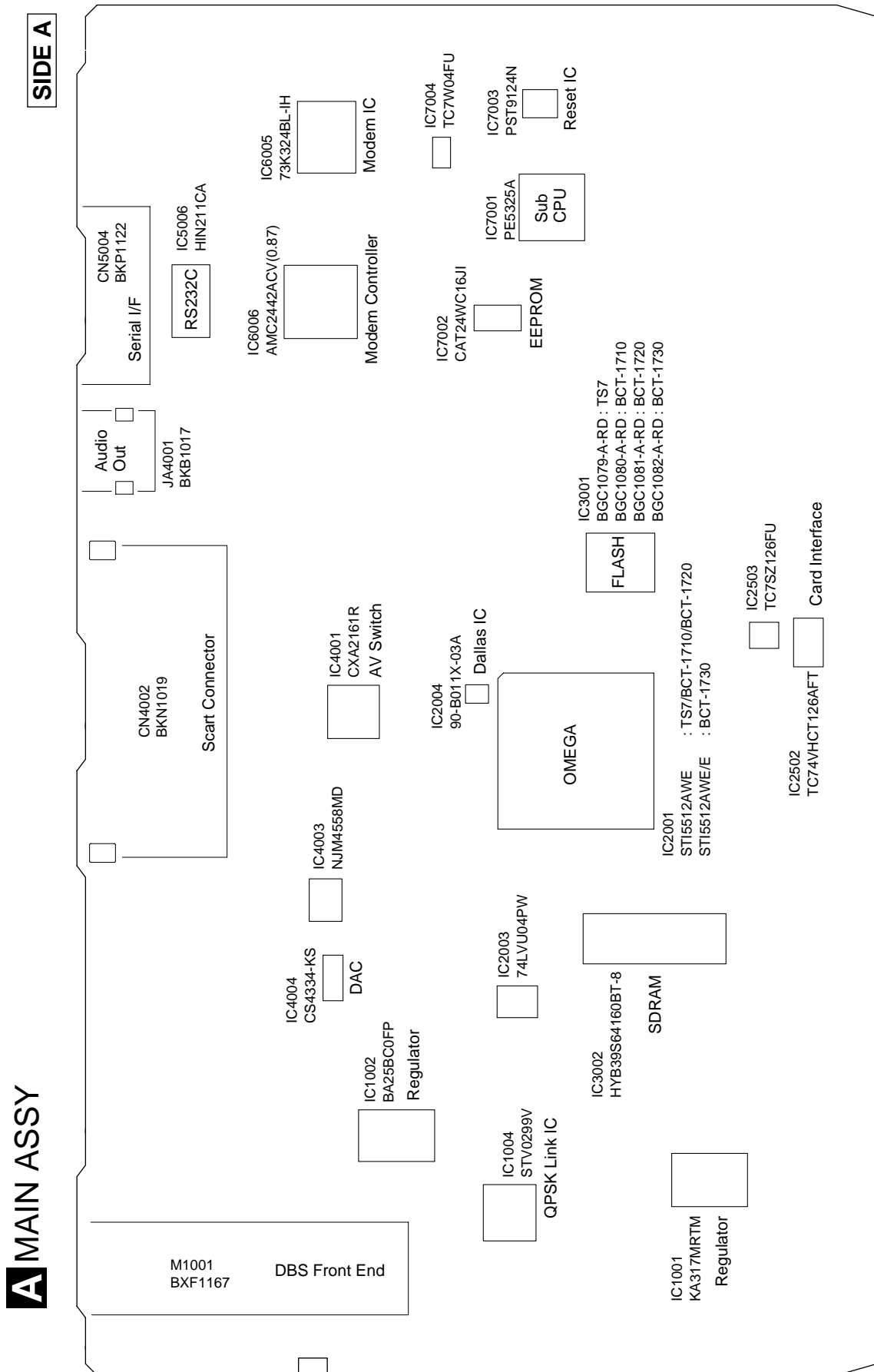
● Pin Layout



● Block Diagram



7.3 IC LOCATIONS



7.4 MOUNTING CONDITION FOR BGA

1. OMEGA(Programable Transport IC)_STi5512AWE/STi5512AWE/E

1.1 Resistance classification of solder reflow

The heat-resistance property of solder depends on package design and chip size. The JEDEC (Joint Electron Device Engineering Council) standards classify and define the term of viability after opening antihumidity packaging until accomplishment of solder reflow as MSL (Moisture Sensitivity Level).

MSL	Storage environment	Term of viability
3	30deg.C/60%RH	168 hours

MSL classification

Note

The MSL classification we employ conforms to JEDEC-STD-020 and JESD22-A112. (The latest revision JEDEC-STD-020A uses more detailed classifications, to which our products do not correspond.)

1.2 Recommended reflow conditions

1.2.1 Recommended temperature profile (IR reflow and hot-air reflow)

The recommended temperature profile for IR (infrared) reflow and hot-air reflow is shown in Figure 2.

The number of times of reflow should be three or less.

For IR reflow it is recommended to use a reflow device which uses middle or far infrared radiation.

When compared with middle and far infrared radiation, higher infrared-heat absorption rate on the mold resins and larger heat stress would be measured with near infrared radiation.

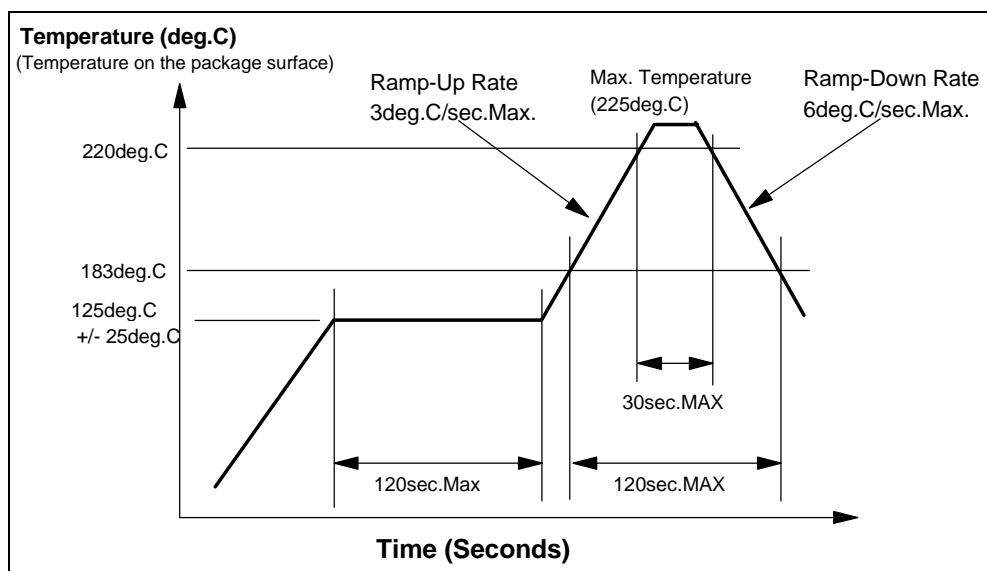


Figure 1: Recommended temperature profile (conforming to JEDEC-STD-020)

1.2.2 In the case of VPS

Vapor-phase soldering must be accomplished at an ambient temperature of 215 ± 3 degrees C or less within 30 seconds. To improve soldering performance, preheating (at 100 to 150 degrees C for 100 to 120 seconds) is recommended, as shown in the temperature profile for IR reflow.

The number of times of reflow should be three or less.

1.3 Requirements for storage and baking after opening the antihumidity packaging (dry bag)

If some devices remain in opened packaging because of your product control, it is recommended to store them in a desiccator (storage box with constant temperature and low humidity less than 20% RH) or promptly reseal the antihumidity packaging after use.

Heatproof trays (you will see clear "Heat Proof Tray" markings) are employed for some products. If the term of viability after opening the antihumidity packaging elapses during your manufacturing span, be sure to apply a baking process to the products with the heatproof tray before mounting the products.

The recommended baking conditions are as follows:

Package 1.8 mm thick or more: at 125 degrees C for 24 hours

Package 1.7 mm thick or more: at 125 degrees C for 12 hours

Package 1.0 mm thick or more: at 125 degrees C for 6 hours

1.4 Analysis of nonconforming items

When you remove our semiconductor products to analyze a nonconforming item, it is recommended to remove them after baking under the conditions mentioned in paragraph 4 above. If you remove the product using hot air in a status where the resin has absorbed moisture, heat stress may cause package cracking or adhesion degradation of the resin, and the actual reason for nonconformity may not found easily.

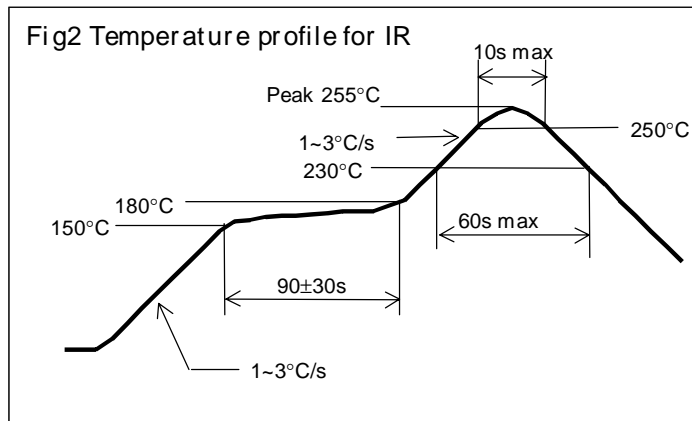
1.5 Humidity indicator

A humidity indicator as shown in Figure 3, is enclosed in the antihumidity packaging along with our products. If the enclosed humidity indicator indicates 30% or more when you open the antihumidity packaging, it is likely that the seal of the packaging has been affected by some mechanical damage during transportation, and moisture must have entered the packaging, causing the products absorb moisture. In such cases, be sure to perform baking under the conditions mentioned in paragraph 4 above. If degradation of packaging seal is considered to have occurred before delivery to you, return the products to our representative or us.

2. Sanyou_FLASH MEMORY_LE28DW1621F-80T

2.1 Soldering condition for Surface Mount Device

1. Soldering Copper (Max.) method
Temperature Time : 350 °C, 3s.
2. Reflow Soldering method (In fra-Red(I/R) Reflow Soldering)
 - ① Limitation of Re flow times : 2 times
 - ② Temperature profile : see Fig.2



Notice: It is possible to effect reliability of Semiconductor a device if device is put in high temperature at long time.
Please solder as soon as possible.

2.2 Notice for handling of package to a anti-humidity packaging

1. Storage before opening

Please store device under the condition that temperature is less than 30°C and humidity is less than 70% RH before opening.

2. After opening the anti-humidity packaging

Please store device under the condition that temperature is less than 30°C and humidity is less than 70% RH and mount device on board within 96 hours after opening.

Please store remained devices in desiccator and desiccate it before mounting.

3. Humidity indicator of desiccant

Blue indicator is included in desiccant into anti-humidity package and color of which is changed to pink when humidity inside package is over 30% RH (25°C). That indicator may be changed when an device is stored and is not used at long time after opening. Please desiccate semiconductor device before mounting if that indicator will be changed.

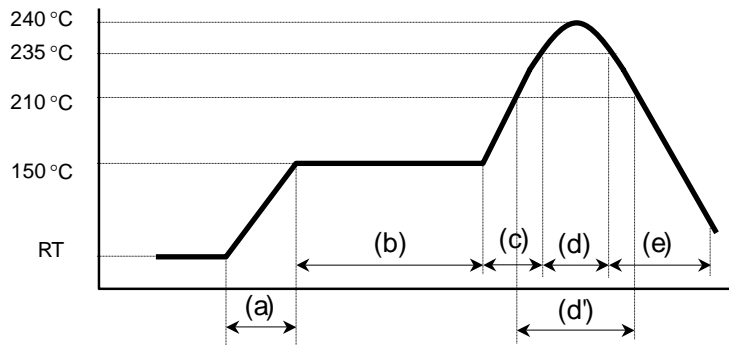
4. Desiccation condition

It is possible to desiccate for only heat-proof Tory package on the condition that temperature is 125°C and desiccation time is 24 hours if semiconductor device should be desiccated.

Please change Tory package to heat -proof one or desiccate at low temperature (60°C, 168hours) in case it is impossible to desiccate for other type Tory package at 125°C. And the desicca tion can not be applied for magazine (stick) package, paper glue taping package and emboss taping package.

3. Fujituu_FLASH MEMORY_

Fig. 3 <Temperature Profile for FJ Standard IR Reflow >



- | | |
|--|---|
| (a) Average ramp-up rate | 1°C/sec to 4°C/sec (average) |
| (b) Preheat temperature | 150°C to 190°C |
| (c) Average ramp-up rate | 1°C/sec to 4°C/sec (average) |
| (d) Peak temperature range | Peak temp.= 240°C Temp. maintained above 235°C=10 seconds |
| (d') | Temp. maintained above 210°C= 40seconds(max.) |
| (e) Ramp-down rate | Natural cooling or forcedcooling |
| Note) All temperaturesrefer to top surface of the package. | |

Notice: It is possible to effect reliability of Semiconductor a device if device is put in high temperature at long time.
Please solder as soon as possible.

■ Notice for handling of package to anti-humidity packaging

1. Storage before opening

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Please store device under the condition that temperature is less than 30°C and humidity is less than 70% RH and mount device on board within 96 hours after opening.

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3. Humidity indicator of desiccant

Blue indicator is included in desiccant into anti-humidity package and color of which is changed to pink when humidity inside package is over 30% RH (25°C). That indicator may be changed when an device is stored and is not used at long time after opening. Please desiccate semiconductor device before mounting if that indicator will be changed.

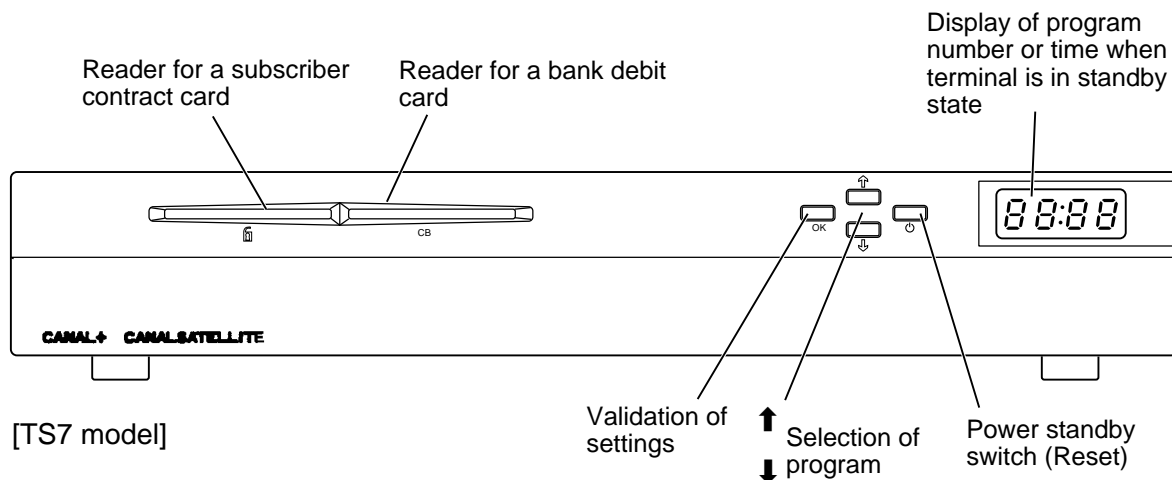
4. Desiccation condition

It is possible to desiccate for only heat-proof Tory package on the condition that temperature is 125°C and desiccation time is 24 hours if semiconductor device should be desiccated.

Please change Tory package to heat -proof one or desiccate at low temperature (60°C, 168hours) in case it is impossible to desiccate for other type Tory package at 125°C. And the desicca tion can not be applied for magazine (stick) package, paper glue taping package and emboss taping package.

8. PANEL FACILITIES

FRONT PANEL



REAR PANEL

