

Jun. 2010



SERVICE MANUAL ADDENDUM

IC-RP2V

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[VERSION LIST]

Model	Version	FREQUENCY RANGE
ID-RP2V	USA-01	1240-1300 MHz
	EUR-01	

PARTS LIST

[FRONT UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
D1	1730002301	S.ZEN MAZ8082GML	T	7.5/21.8
D3	1790001711	S.DIO NNCD5.6C-T1-A	T	57.5/16.7
D4	1790001711	S.DIO NNCD5.6C-T1-A	T	53/16.7
D5	1790001711	S.DIO NNCD5.6C-T1-A	T	48.4/16.7
D6	1790001711	S.DIO NNCD5.6C-T1-A	T	43.9/16.7
D7	1790001711	S.DIO NNCD5.6C-T1-A	T	78/16.6
D8	1790001711	S.DIO NNCD5.6C-T1-A	T	73.5/16.6
D9	1790001711	S.DIO NNCD5.6C-T1-A	T	69/16.7
D10	1790001711	S.DIO NNCD5.6C-T1-A	T	64.5/16.6
R1	7030006250	S.RES ERJ12YJ271U (270)	T	8.5/30.5
R2	7030008180	S.RES ERJ12YJ331U (330)	T	8.5/7.8
R3	7030003860	S.RES ERJ3GE JPW V	T	60.5/16.5
R4	7030003860	S.RES ERJ3GE JPW V	T	56/16.5
R5	7030003860	S.RES ERJ3GE JPW V	T	51.5/16.5
R6	7030003860	S.RES ERJ3GE JPW V	T	46.9/16.5
R7	7030003860	S.RES ERJ3GE JPW V	T	81/16.5
R8	7030003860	S.RES ERJ3GE JPW V	T	76.5/16.5
R9	7030003860	S.RES ERJ3GE JPW V	T	72/16.5
R10	7030003860	S.RES ERJ3GE JPW V	T	67.5/16.5
C1	4030011600	S.CER C1608 JB 1E 104K-T	T	7.2/18.8
C2	4510008800	S.ELE EEE1EA100SR [USA]	T	9.4/25.7
	4510008800	S.ELE EEE1EA100SR [EUR]		
	4510009400	S.ELE UUL1V100MCL1GS [USA-01]		
	4510009400	S.ELE UUL1V100MCL1GS [EUR-01]		
C3	4030007050	S.CER C1608 CH 1H 220J-T	T	59/16.5
C4	4030007050	S.CER C1608 CH 1H 220J-T	T	54.5/16.5
C5	4030007050	S.CER C1608 CH 1H 220J-T	T	49.9/16.5
C6	4030007050	S.CER C1608 CH 1H 220J-T	T	45.4/16.5
C7	4030007050	S.CER C1608 CH 1H 220J-T	T	79.5/16.5
C8	4030007050	S.CER C1608 CH 1H 220J-T	T	75/16.5
C9	4030007050	S.CER C1608 CH 1H 220J-T	T	70.5/16.5
C10	4030007050	S.CER C1608 CH 1H 220J-T	T	66/16.5
C11	4030006850	S.CER C1608 JB 1H 471K-T	T	7.2/20.1
J1	6450002101	CON CMS1410-016010		
J2	6450002101	CON CMS1410-016010		
J3	6510020251	S.CON B9B-PH-SM4-TB(LF)(SN)	T	22.4/39.5
J4	6510022311	S.CON B5B-PH-SM4-TB(LF)(SN)	T	72.5/39.5
DS1	5040003070	LED MPG4371F		
S1	2220000631	SWI MFS201N-16-Z		

[REAR UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
D1	1790001711	S.DIO NNCD5.6C-T1-A	T	36.9/71.8
D2	1790001711	S.DIO NNCD5.6C-T1-A	T	32.9/71.8
D3	1790001711	S.DIO NNCD5.6C-T1-A	T	24.9/71.8
D4	1790001711	S.DIO NNCD5.6C-T1-A	T	20.9/71.8
D5	1790001711	S.DIO NNCD5.6C-T1-A	T	16.9/71.7
D6	1790001711	S.DIO NNCD5.6C-T1-A	T	12.9/71.8
D7	1790000700	DIO DSA3A1		
D8	1790001711	S.DIO NNCD5.6C-T1-A	T	28.9/71.8
R1	7030003300	S.RES ERJ3GEYJ 680 V (68)	T	36/76.4
R2	7030003300	S.RES ERJ3GEYJ 680 V (68)	T	32/76.4
R3	7030003300	S.RES ERJ3GEYJ 680 V (68)	T	24/76.4
R4	7030003320	S.RES ERJ3GEYJ 101 V (100)	T	20/76.4
R5	7030003320	S.RES ERJ3GEYJ 101 V (100)	T	16/76.4
R6	7030003300	S.RES ERJ3GEYJ 680 V (68)	T	12/76.4
R7	7030011030	S.RES ERJ1TYJ 270U (27)	T	35.3/21.3
R8	7030003340	S.RES ERJ3GEYJ 151 V (150)	T	28/76.4
C7	4510008800	S.ELE EEE1EA100SR [USA]	T	40.8/26.6
	4510008800	S.ELE EEE1EA100SR [EUR]		
	4510009400	S.ELE UUL1V100MCL1GS [USA-01]		
	4510009400	S.ELE UUL1V100MCL1GS [EUR-01]		
J1	6510018921	S.CON B8B-PH-SM4-TB(LF)(SN)	T	23.9/43
J2	6510016171	CON 52018-8836 [USA]		
	6510016171	CON 52018-8836 [EUR]		
	6510016481	CON 52018-8846(8845) [USA-01]		
	6510016481	CON 52018-8846(8845) [EUR-01]		
J3	6510023261	S.CON B6B-PH-SM4-TB(LF)(SN)	T	25.9/58.5
J4	6510011591	CON B2P-VH(LF)(SN)		
J5	6510011461	CON B6P-VH(LF)(SN)		
J6	6510018961	S.CON B2B-PH-SM4-TB(LF)(SN)	T	39.8/36.3

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[LOGIC-T-2 UNIT]

Table with 5 columns: REF NO., PARTS NO., DESCRIPTION, M., H/V LOCATION. Rows include IC50-IC902, Q50-Q55, D50-D54, X50-X55, L50-L55, and R18-R53.

[LOGIC-T-2 UNIT]

Table with 5 columns: REF NO., PARTS NO., DESCRIPTION, M., H/V LOCATION. Rows include R54-R304.

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side) S.=Surface mount

[LOGIC-T-2 UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C351	4030011600	S.CER C1608 JB 1E 104K-T	T	90.6/32.5
C352	4030011600	S.CER C1608 JB 1E 104K-T	T	76.5/28.3
C353	4030011810	S.CER C1608 JB 1A 224K-T	T	92.4/33.1
C354	4030011600	S.CER C1608 JB 1E 104K-T	T	93.7/33.1
C355	4030006860	S.CER C1608 JB 1H 102K-T	T	96.5/29.7
C356	4030006860	S.CER C1608 JB 1H 102K-T	T	96.5/28.4
C357	4030011600	S.CER C1608 JB 1E 104K-T	T	100.6/32.3
C358	4030006860	S.CER C1608 JB 1H 102K-T	T	101.3/27
C359	4030008920	S.CER C1608 JB 1H 473K-T	B	85.7/28.7
C360	4030011600	S.CER C1608 JB 1E 104K-T	T	104.8/22.4
C361	4030011810	S.CER C1608 JB 1A 224K-T	T	93.3/25.7
C362	4030011600	S.CER C1608 JB 1E 104K-T	B	85.2/23.8
C363	4030008920	S.CER C1608 JB 1H 473K-T	T	82/23.8
C364	4030011600	S.CER C1608 JB 1E 104K-T	T	93.3/24.4
C400	4030006850	S.CER C1608 JB 1H 471K-T	T	17.6/11.9
C401	4030007090	S.CER C1608 CH 1H 470J-T	T	17.6/13.2
C402	4030006900	S.CER C1608 JB 1H 103K-T	B	82/23.6
C403	4030007090	S.CER C1608 CH 1H 470J-T	B	16.8/25.1
C404	4030007090	S.CER C1608 CH 1H 470J-T	B	18.1/24.6
C405	4030007090	S.CER C1608 CH 1H 470J-T	B	15.5/25.1
C406	4030007090	S.CER C1608 CH 1H 470J-T	B	14.2/25.1
C407	4030007090	S.CER C1608 CH 1H 470J-T	T	38.8/74.1
C408	4030007090	S.CER C1608 CH 1H 470J-T	B	83.4/16.8
C409	4030007130	S.CER C1608 CH 1H 101J-T	B	77.1/20.2
C410	4030007130	S.CER C1608 CH 1H 101J-T	T	76.8/23.6
C411	4030007130	S.CER C1608 CH 1H 101J-T	B	83.9/23.8
C412	4030007130	S.CER C1608 CH 1H 101J-T	B	86.6/19.4
C413	4030007090	S.CER C1608 CH 1H 470J-T	T	43.3/74.9
C414	4030007090	S.CER C1608 CH 1H 470J-T	B	31.7/71.5
C415	4030007090	S.CER C1608 CH 1H 470J-T	B	30.4/71.5
C416	4030007090	S.CER C1608 CH 1H 470J-T	B	31.2/74.2
C417	4030007090	S.CER C1608 CH 1H 470J-T	B	29.1/71.5
C418	4030007090	S.CER C1608 CH 1H 470J-T	B	27.8/71.5
C419	4030007090	S.CER C1608 CH 1H 470J-T	B	26.5/71.5
C420	4030007090	S.CER C1608 CH 1H 470J-T	B	41.6/80.7
C421	4030007090	S.CER C1608 CH 1H 470J-T	B	29.6/81.1
C422	4030007090	S.CER C1608 CH 1H 470J-T	B	8.2/21.4
C423	4030007090	S.CER C1608 CH 1H 470J-T	B	9.5/21.4
C424	4030007090	S.CER C1608 CH 1H 470J-T	B	72/22.8
C425	4030007090	S.CER C1608 CH 1H 470J-T	B	71.3/20.2
C426	4030007090	S.CER C1608 CH 1H 470J-T	B	73.4/16.7
C427	4030007090	S.CER C1608 CH 1H 470J-T	T	74.9/24.1
C428	4030007090	S.CER C1608 CH 1H 470J-T	B	76.9/22.9
C429	4030007090	S.CER C1608 CH 1H 470J-T	T	78.1/22.8
C430	4030007090	S.CER C1608 CH 1H 470J-T	T	79.4/22.8
C431	4030007090	S.CER C1608 CH 1H 470J-T	B	87.3/13.2
C432	4030007090	S.CER C1608 CH 1H 470J-T	B	80.6/23.6
C433	4030007090	S.CER C1608 CH 1H 470J-T	B	80.9/20.2
C434	4030007090	S.CER C1608 CH 1H 470J-T	B	80.3/12.5
C435	4030007090	S.CER C1608 CH 1H 470J-T	B	82.2/20.2
C437	4030007090	S.CER C1608 CH 1H 470J-T	B	84.7/18.4
C438	4030007090	S.CER C1608 CH 1H 470J-T	B	22/23.6
C442	4030011600	S.CER C1608 JB 1E 104K-T	T	80.7/23.6
C443	4030011810	S.CER C1608 JB 1A 224K-T	B	71.3/24.6
C500	4510008520	S.ELE EEE1CA470SP [USA]	B	84.4/69.5
	4510008520	S.ELE EEE1CA470SP [EUR]		
	4510009950	S.ELE EEEHC1C470P [USA-01]		
	4510009950	S.ELE EEEHC1C470P [EUR-01]		
C501	4030011600	S.CER C1608 JB 1E 104K-T	T	84.1/72.4
C502	4030011600	S.CER C1608 JB 1E 104K-T	T	86.5/73
C503	4510008520	S.ELE EEE1CA470SP [USA]	B	96.2/69.9
	4510008520	S.ELE EEE1CA470SP [EUR]		
	4510009950	S.ELE EEEHC1C470P [USA-01]		
	4510009950	S.ELE EEEHC1C470P [EUR-01]		
C504	4030006850	S.CER C1608 JB 1H 471K-T	T	86.5/71.7
C506	4030011600	S.CER C1608 JB 1E 104K-T	T	58.6/13.5
C509	4550006250	S.TAN TEESVA 1A 106M8R	T	85.3/70
C510	4030011600	S.CER C1608 JB 1E 104K-T	T	97.4/23.8
C511	4030011600	S.CER C1608 JB 1E 104K-T	T	90.5/70.2
C512	4550006250	S.TAN TEESVA 1A 106M8R	T	88.8/70.4
C513	4510007130	S.ELE EEFCD 0J 470R	T	98.6/79.1
C514	4030006850	S.CER C1608 JB 1H 471K-T	T	109.3/81.9
C515	4510008850	S.ELE EEE1CA101P [USA]	B	109.5/69.3
	4510008850	S.ELE EEE1CA101P [EUR]		
	4510008910	S.ELE EEEFC1C101P [USA-01]		
	4510008910	S.ELE EEEFC1C101P [EUR-01]		
C516	4510008490	S.ELE EEE1CS100SR [USA]	B	64.2/82
	4510008490	S.ELE EEE1CS100SR [EUR]		
	4510010130	S.ELE UWT1C100MCL2GB [USA-01]		
	4510010130	S.ELE UWT1C100MCL2GB [EUR-01]		
C517	4030011600	S.CER C1608 JB 1E 104K-T	T	66.9/81.3
C518	4030011600	S.CER C1608 JB 1E 104K-T	T	64.5/78.5
C519	4550006250	S.TAN TEESVA 1A 106M8R	T	65.2/75.9
C520	4550007480	S.TAN F930J106MAABMA [USA]	T	71.7/81.7
	4550007480	S.TAN F930J106MAABMA [EUR]		
	4550007520	S.TAN F931A106MAABMA [USA-01]		
	4550007520	S.TAN F931A106MAABMA [EUR-01]		
C521	4550007480	S.TAN F930J106MAABMA [USA]	B	69.4/70.9
	4550007480	S.TAN F930J106MAABMA [EUR]		
	4550007520	S.TAN F931A106MAABMA [USA-01]		
	4550007520	S.TAN F931A106MAABMA [EUR-01]		
C522	4550007320	S.TAN F930J226MAABMA [USA]	T	96.6/71.7
	4550007320	S.TAN F930J226MAABMA [EUR]		
	4550007090	S.TAN TEESVA 1A 226M8R [USA-01]		
	4550007090	S.TAN TEESVA 1A 226M8R [EUR-01]		
C550	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/69
C551	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/54
C553	4030011600	S.CER C1608 JB 1E 104K-T	B	15.4/59.9
C554	4030011600	S.CER C1608 JB 1E 104K-T	T	18.1/62.2
C556	4030008900	S.CER C1608 JB 1H 333K-T	B	18.7/70.1
C557	4550007480	S.TAN F930J106MAABMA [USA]	T	13.5/75.1
	4550007480	S.TAN F930J106MAABMA [EUR]		
	4550007520	S.TAN F931A106MAABMA [USA-01]		
	4550007520	S.TAN F931A106MAABMA [EUR-01]		
C558	4030006900	S.CER C1608 JB 1H 103K-T	T	15.2/73.9

[LOGIC-T-2 UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C559	4030007090	S.CER C1608 CH 1H 470J-T	T	84/61.1
C561	4030007090	S.CER C1608 CH 1H 470J-T	T	85.7/57.4
C578	4030007090	S.CER C1608 CH 1H 470J-T	B	12.3/55
C579	4030007090	S.CER C1608 CH 1H 470J-T	B	10.7/53
C901	4030011600	S.CER C1608 JB 1E 104K-T	B	31.4/11.9
J50	6510019271	S.CON 52365-0671	T	5.1/49.9
J100	6510023861	S.CON S9B-ZR-SM4A-TF(LF)(SN)	B	18/83.2
J101	6510022820	S.CON AXN430C530P	B	17.2/14.8
J300	6510018351	S.CON S3B-ZR-SM4A-TF(LF)(SN)	T	13.9/18.4
J400	6510022711	S.CON 30FLZ-SM2-TB(LF)(SN)	T	78/13.7
J401	6510022711	S.CON 30FLZ-SM2-TB(LF)(SN)	T	35/80.4
J901	6510021431	S.CON S8B-ZR-SM4A-TF(LF)(SN)	T	13.2/3
W1	8900013180	CAB OPC-1312 (2732 TX-CTRL CABLE)		

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[LOGIC-R-2 UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C351	4030011600	S.CER C1608 JB 1E 104K-T	T	90.6/32.5
C352	4030011600	S.CER C1608 JB 1E 104K-T	T	76.5/28.3
C353	4030011810	S.CER C1608 JB 1A 224K-T	T	92.4/33.1
C354	4030011600	S.CER C1608 JB 1E 104K-T	T	93.7/33.1
C355	4030006860	S.CER C1608 JB 1H 102K-T	T	96.5/29.7
C356	4030006860	S.CER C1608 JB 1H 102K-T	T	96.5/28.4
C357	4030011600	S.CER C1608 JB 1E 104K-T	T	100.6/32.3
C358	4030006860	S.CER C1608 JB 1H 102K-T	T	101.3/27
C359	4030008920	S.CER C1608 JB 1H 473K-T	B	85.7/28.7
C360	4030011600	S.CER C1608 JB 1E 104K-T	T	104.8/22.4
C361	4030011810	S.CER C1608 JB 1A 224K-T	T	93.3/25.7
C362	4030011600	S.CER C1608 JB 1E 104K-T	B	85.2/23.8
C363	4030008920	S.CER C1608 JB 1H 473K-T	T	82/23.8
C364	4030011600	S.CER C1608 JB 1E 104K-T	T	93.3/24.4
C400	4030006850	S.CER C1608 JB 1H 471K-T	T	17.6/11.9
C401	4030007090	S.CER C1608 CH 1H 470J-T	T	17.6/13.2
C402	4030006900	S.CER C1608 JB 1H 103K-T	B	82/23.6
C403	4030007090	S.CER C1608 CH 1H 470J-T	B	16.8/25.1
C404	4030007090	S.CER C1608 CH 1H 470J-T	B	18.1/24.6
C405	4030007090	S.CER C1608 CH 1H 470J-T	B	15.5/25.1
C406	4030007090	S.CER C1608 CH 1H 470J-T	B	14.2/25.1
C407	4030007090	S.CER C1608 CH 1H 470J-T	T	38.8/74.1
C408	4030007090	S.CER C1608 CH 1H 470J-T	B	83.4/16.8
C409	4030007130	S.CER C1608 CH 1H 101J-T	B	77.1/20.2
C410	4030007130	S.CER C1608 CH 1H 101J-T	T	76.8/23.6
C411	4030007130	S.CER C1608 CH 1H 101J-T	B	83.9/23.8
C412	4030007130	S.CER C1608 CH 1H 101J-T	B	86.6/19.4
C413	4030007090	S.CER C1608 CH 1H 470J-T	T	43.3/74.9
C414	4030007090	S.CER C1608 CH 1H 470J-T	B	31.7/71.5
C415	4030007090	S.CER C1608 CH 1H 470J-T	B	30.4/71.5
C416	4030007090	S.CER C1608 CH 1H 470J-T	B	31.2/74.2
C417	4030007090	S.CER C1608 CH 1H 470J-T	B	29.1/71.5
C418	4030007090	S.CER C1608 CH 1H 470J-T	B	27.8/71.5
C419	4030007090	S.CER C1608 CH 1H 470J-T	B	26.5/71.5
C420	4030007090	S.CER C1608 CH 1H 470J-T	B	41.6/80.7
C421	4030007090	S.CER C1608 CH 1H 470J-T	B	29.6/81.1
C422	4030007090	S.CER C1608 CH 1H 470J-T	B	8.2/21.4
C423	4030007090	S.CER C1608 CH 1H 470J-T	B	9.5/21.4
C424	4030007090	S.CER C1608 CH 1H 470J-T	B	72/22.8
C425	4030007090	S.CER C1608 CH 1H 470J-T	B	71.3/20.2
C426	4030007090	S.CER C1608 CH 1H 470J-T	B	73.4/16.7
C427	4030007090	S.CER C1608 CH 1H 470J-T	T	74.9/24.1
C428	4030007090	S.CER C1608 CH 1H 470J-T	B	76.9/22.9
C429	4030007090	S.CER C1608 CH 1H 470J-T	T	78.1/22.8
C430	4030007090	S.CER C1608 CH 1H 470J-T	T	79.4/22.8
C431	4030007090	S.CER C1608 CH 1H 470J-T	B	87.3/13.2
C432	4030007090	S.CER C1608 CH 1H 470J-T	B	80.6/23.6
C433	4030007090	S.CER C1608 CH 1H 470J-T	B	80.9/20.2
C434	4030007090	S.CER C1608 CH 1H 470J-T	B	80.3/12.5
C435	4030007090	S.CER C1608 CH 1H 470J-T	B	82.2/20.2
C437	4030007090	S.CER C1608 CH 1H 470J-T	B	84.7/18.4
C438	4030007090	S.CER C1608 CH 1H 470J-T	B	22/23.6
C442	4030011600	S.CER C1608 JB 1E 104K-T	T	80.7/23.6
C443	4030011810	S.CER C1608 JB 1A 224K-T	B	71.3/24.6
C500	4510008520	S.ELE EEE1CA470SP [USA]	B	84.4/69.5
	4510008520	S.ELE EEE1CA470SP [EUR]		
	4510009950	S.ELE EEEHC1C470P [USA-01]		
	4510009950	S.ELE EEEHC1C470P [EUR-01]		
C501	4030011600	S.CER C1608 JB 1E 104K-T	T	84.1/72.4
C502	4030011600	S.CER C1608 JB 1E 104K-T	T	86.5/73
C503	4510008520	S.ELE EEE1CA470SP [USA]	B	96.2/69.9
	4510008520	S.ELE EEE1CA470SP [EUR]		
	4510009950	S.ELE EEEHC1C470P [USA-01]		
	4510009950	S.ELE EEEHC1C470P [EUR-01]		
C504	4030006850	S.CER C1608 JB 1H 471K-T	T	86.5/71.7
C506	4030011600	S.CER C1608 JB 1E 104K-T	T	58.6/13.5
C509	4550006250	S.TAN TEESVA 1A 106M8R	T	85.3/70
C510	4030011600	S.CER C1608 JB 1E 104K-T	T	97.4/23.8
C511	4030011600	S.CER C1608 JB 1E 104K-T	T	90.5/70.2
C512	4550006250	S.TAN TEESVA 1A 106M8R	T	88.8/70.4
C513	4510007130	S.ELE EEFCD 0J 470R	T	98.6/79.1
C514	4030006850	S.CER C1608 JB 1H 471K-T	T	109.3/81.9
C515	4510008850	S.ELE EEE1CA101P [USA]	B	109.5/69.3
	4510008850	S.ELE EEE1CA101P [EUR]		
	4510008910	S.ELE EEEFC1C101P [USA-01]		
	4510008910	S.ELE EEEFC1C101P [EUR-01]		
C516	4510008490	S.ELE EEE1CS100SR [USA]	B	64.2/82
	4510008490	S.ELE EEE1CS100SR [EUR]		
	4510010130	S.ELE UWT1C100MCL2GB [USA-01]		
	4510010130	S.ELE UWT1C100MCL2GB [EUR-01]		
C517	4030011600	S.CER C1608 JB 1E 104K-T	T	66.9/81.3
C518	4030011600	S.CER C1608 JB 1E 104K-T	T	64.5/78.5
C519	4550006250	S.TAN TEESVA 1A 106M8R	T	65.2/75.9
C520	4550007480	S.TAN F930J106MAABMA [USA]	T	71.7/81.7
	4550007480	S.TAN F930J106MAABMA [EUR]		
	4550007520	S.TAN F931A106MAABMA [USA-01]		
	4550007520	S.TAN F931A106MAABMA [EUR-01]		
C521	4550007480	S.TAN F930J106MAABMA [USA]	B	69.4/70.9
	4550007480	S.TAN F930J106MAABMA [EUR]		
	4550007520	S.TAN F931A106MAABMA [USA-01]		
	4550007520	S.TAN F931A106MAABMA [EUR-01]		
C522	4550007320	S.TAN F930J226MAABMA [USA]	T	96.6/71.7
	4550007320	S.TAN F930J226MAABMA [EUR]		
	4550007090	S.TAN TEESVA 1A 226M8R [USA-01]		
	4550007090	S.TAN TEESVA 1A 226M8R [EUR-01]		
C550	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/69
C551	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/54
C553	4030011600	S.CER C1608 JB 1E 104K-T	B	15.4/59.9
C554	4030011600	S.CER C1608 JB 1E 104K-T	T	18.1/62.2
C556	4030008900	S.CER C1608 JB 1H 333K-T	B	18.7/70.1
C557	4550007480	S.TAN F930J106MAABMA [USA]	T	13.5/75.1
	4550007480	S.TAN F930J106MAABMA [EUR]		
	4550007520	S.TAN F931A106MAABMA [USA-01]		
	4550007520	S.TAN F931A106MAABMA [EUR-01]		
C558	4030006900	S.CER C1608 JB 1H 103K-T	T	15.2/73.9

[LOGIC-R-2 UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C559	4030007090	S.CER C1608 CH 1H 470J-T	T	84/61.1
C561	4030007090	S.CER C1608 CH 1H 470J-T	T	85.7/57.4
C578	4030007090	S.CER C1608 CH 1H 470J-T	B	12.3/55
C579	4030007090	S.CER C1608 CH 1H 470J-T	B	10.7/53
C901	4030011600	S.CER C1608 JB 1E 104K-T	B	31.4/11.9
J50	6510019271	S.CON 52365-0671	T	5.1/49.9
J100	6510023861	S.CON S9B-ZR-SM4A-TF(LF)(SN)	B	18/83.2
J101	6510022820	S.CON AXN430C530P	B	17.2/14.8
J300	6510018351	S.CON S3B-ZR-SM4A-TF(LF)(SN)	T	13.9/18.4
J400	6510022711	S.CON 30FLZ-SM2-TB(LF)(SN)	T	78/13.7
J401	6510022711	S.CON 30FLZ-SM2-TB(LF)(SN)	T	35/80.4
J901	6510021431	S.CON S8B-ZR-SM4A-TF(LF)(SN)	T	13.2/3
W1	8900013161	CAB OPC-1313A (2732 RX-CTRL CABLE)		

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[MAIN-R-2 UNIT]

Table with columns: REF NO., PARTS NO., DESCRIPTION, M., H/V LOCATION. Contains 180 rows of component data for the MAIN-R-2 UNIT.

[MAIN-R-2 UNIT]

Table with columns: REF NO., PARTS NO., DESCRIPTION, M., H/V LOCATION. Contains 180 rows of component data for the MAIN-R-2 UNIT.

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side) S.=Surface mount

[MAIN-R-2 UNIT]

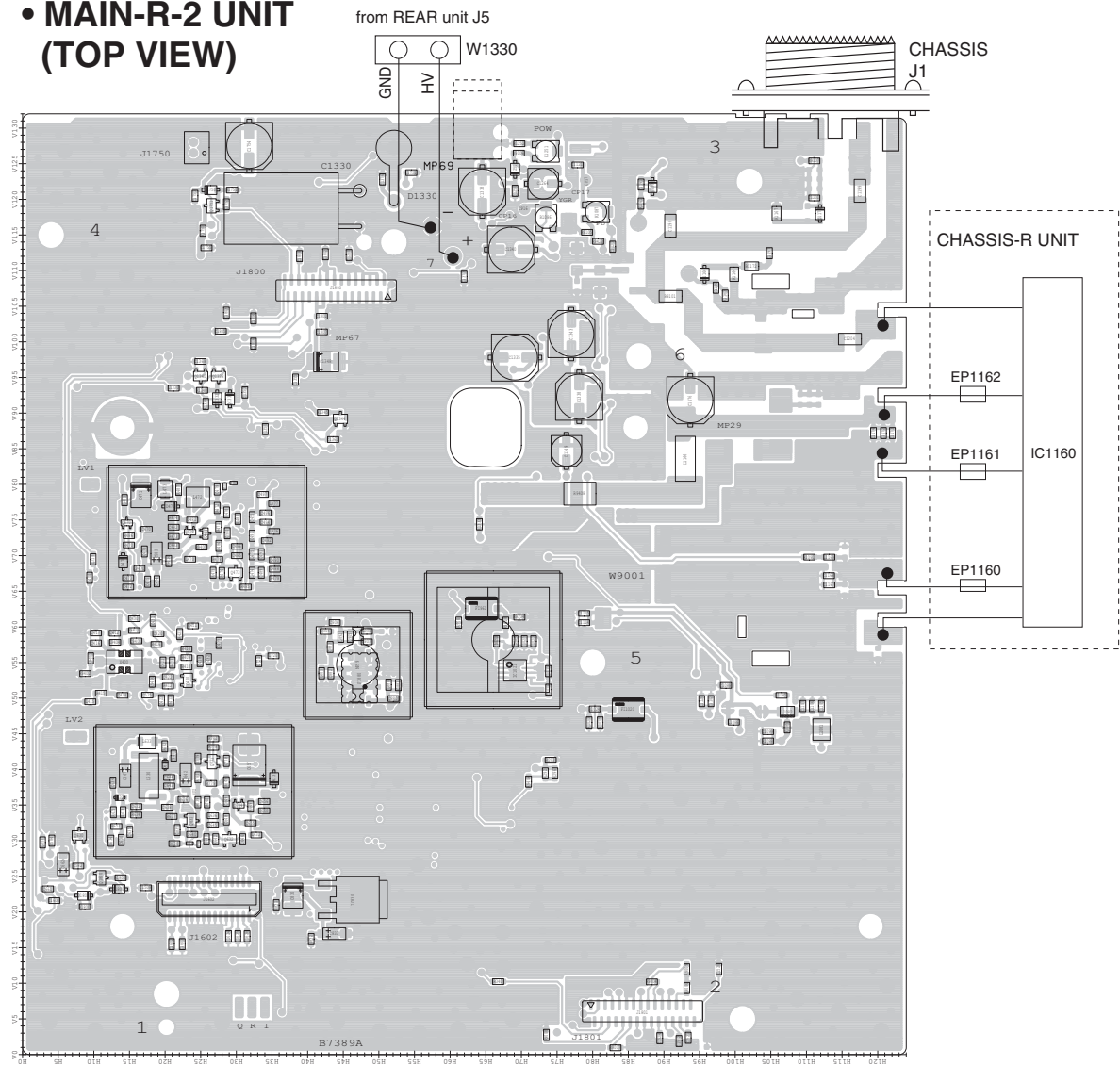
REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C1625	4030007090	S.CER C1608 CH 1H 470J-T	T	30.2/16.6
C1626	4030007090	S.CER C1608 CH 1H 470J-T	T	31.5/16.6
C1751	4030006850	S.CER C1608 JB 1H 471K-T	T	54.5/123.7
C1752	4030006900	S.CER C1608 JB 1H 103K-T	T	36.9/110.7
C1800	4030007090	S.CER C1608 CH 1H 470J-T	B	24/20.5
C1801	4030006900	S.CER C1608 JB 1H 103K-T	T	42/103.6
C1802	4030006900	S.CER C1608 JB 1H 103K-T	T	42.5/112.3
C1803	4030006850	S.CER C1608 JB 1H 471K-T	T	28.6/104.1
C1804	4030006850	S.CER C1608 JB 1H 471K-T	T	32.4/103.3
C1805	4030006850	S.CER C1608 JB 1H 471K-T	T	27.8/101.5
C1806	4030006850	S.CER C1608 JB 1H 471K-T	T	32.4/99.7
C1807	4030006850	S.CER C1608 JB 1H 471K-T	T	42/101.4
C1808	4030007090	S.CER C1608 CH 1H 470J-T	T	38.8/112
C9202	4030003860	S.CER GRM2164C1HR75CD01D (GRM40 CK)	T	81/109
C9203	4030003860	S.CER GRM2164C1HR75CD01D (GRM40 CK)	T	77.7/111
C9401	4030006860	S.CER C1608 JB 1H 102K-T	T	17.8/58.3
C9403	4030007020	S.CER C1608 CH 1H 120J-T	T	20/40.2
C9404	4550007080	S.TAN TEESVA 1C 106M8R	B	17.5/38.7
C9405	4030007100	S.CER C1608 CH 1H 560J-T	T	39.9/55.5
C9406	4550000550	S.TAN TEESVA 1V 224M8R	B	14/74.4
C9407	4030007030	S.CER C1608 CH 1H 150J-T	T	37.1/57.5
C9408	4030006860	S.CER C1608 JB 1H 102K-T	T	50.2/35.8
C9409	4030007090	S.CER C1608 CH 1H 470J-T	T	56.2/76.3
C9410	4030006860	S.CER C1608 JB 1H 102K-T	T	56.6/78.1
C9411	4030006860	S.CER C1608 JB 1H 102K-T	T	53.1/78.4
C9412	4030009530	S.CER C1608 CH 1H 030B-T	T	54.5/72.9
C9413	4030017370	S.CER C1005 CH 1H 3R5B-T	T	18/34.3
C9414	4030017550	S.CER C1005 CH 1H 1R5B-T	T	29/80.1
C9418	4030007060	S.CER C1608 CH 1H 270J-T	T	98.2/21.7
J1602	6510021970	S.CON AXN330C130P	T	26.2/21.8
J1800	6510021722	S.CON 30FLT-SM2-TB(LF)(SN)(M)	T	44/107.5
J1801	6510021722	S.CON 30FLT-SM2-TB(LF)(SN)(M)	T	87/5.8
W1330	8900011960	CAB OPC-1216		
EP401	6910012350	S.BEA MMZ1608Y 102BT	B	16.3/67.9
EP403	6910012350	S.BEA MMZ1608Y 102BT	B	19.4/62.1
EP404	6910012350	S.BEA MMZ1608Y 102BT	T	13.9/60.7
EP405	6910012350	S.BEA MMZ1608Y 102BT	B	18/65.6
EP470	6910012350	S.BEA MMZ1608Y 102BT	T	16.4/68.3
EP482	6910012350	S.BEA MMZ1608Y 102BT	B	12.9/82.8
EP551	6910012350	S.BEA MMZ1608Y 102BT	B	35.9/23.3
EP552	6910012350	S.BEA MMZ1608Y 102BT	B	27.2/52.5
EP553	6910012350	S.BEA MMZ1608Y 102BT	B	20.7/48.1
EP721	6910012350	S.BEA MMZ1608Y 102BT	B	32.1/85.5
MP1	8510018150	S.CAS 2969 B-VCO CASE	T	26/73.2
MP2	8510018150	S.CAS 2969 B-VCO CASE	T	24/36.9
MP4	8510019650	S.CAS 3250 VCO CASE Y1179	B	41.9/74.4
MP7	8510018910	S.CAS 3062 VCO CASE Y1092	T	52.7/71.5
MP8	8510018150	S.CAS 2969 B-VCO CASE	B	20.2/69

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

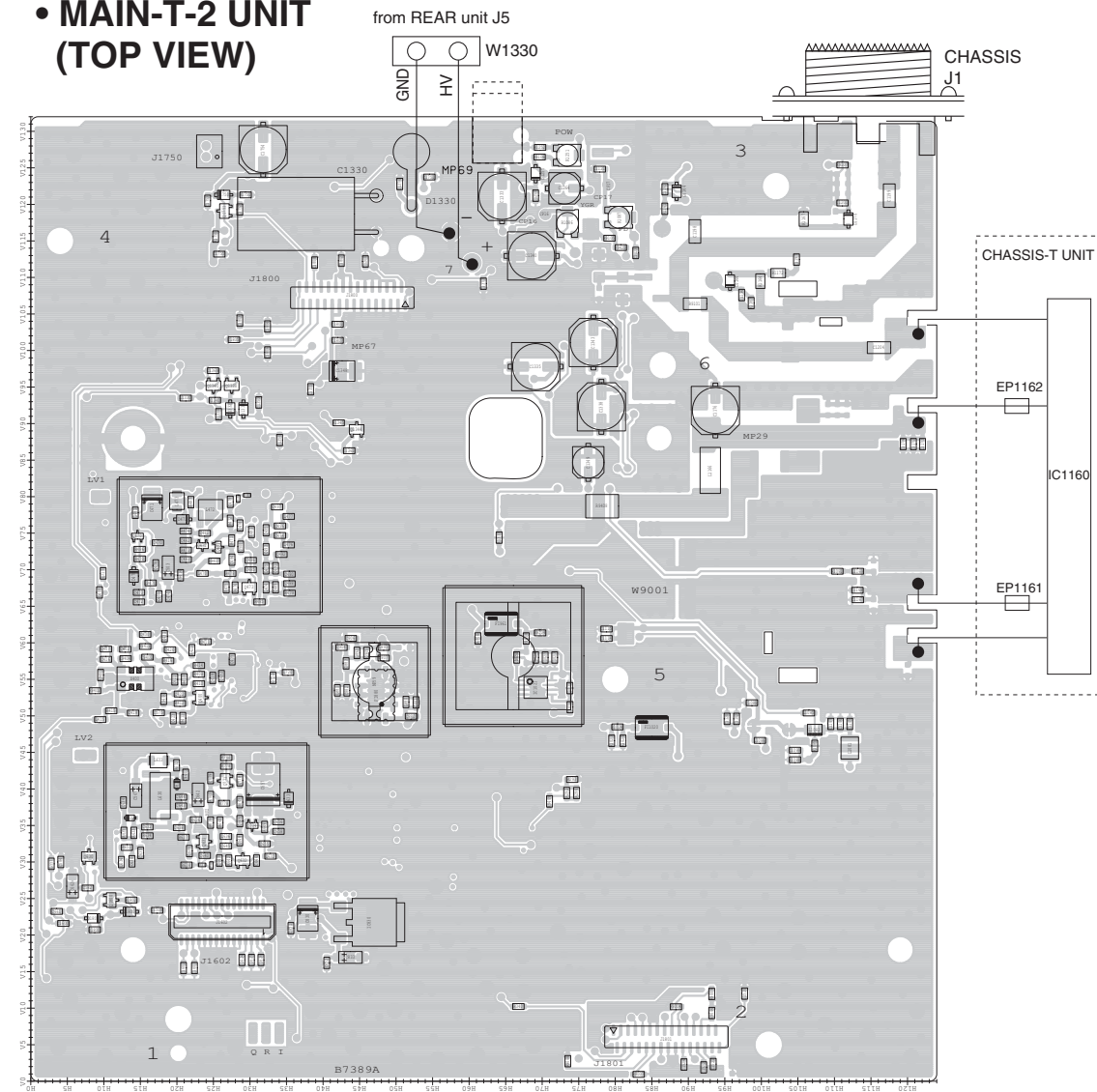
BOARD LAYOUTS

The combination of top side and bottom side of this page shows the actual configuration of P.C. board.

• MAIN-R-2 UNIT (TOP VIEW)



• MAIN-T-2 UNIT (TOP VIEW)



J1602	
16	SHIFT
15	UNLK
	GND
	GND
	PSCK
	PDAT
	P2RS
	P2ST
	GND
	GND
	GND
	GND
	GND
	GND
	TXSW
	DAF
1	

J1800	
30	BEEP
29	AMUT
	FANC
	VCTL
	GND
	TXS
	RXS
	NC
	+3
	HVL
	NC
	HVL
	NC
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	PWRS
2	

J1750	
2	FAN-
1	FAN+

J1801	
1	IBAS
	OBAS
	NGND
	SCAN
	THER
	FMUT
	ADSW
	DAMOD
	GND
	WNS
	MGND
	GND
	MMUT
	GND
	MPE
	MIN
	+5A
	RSSI
	TXD
	CENV
	NC
	NC
	MUID
29	
2	

J1750	
2	FAN-
1	FAN+

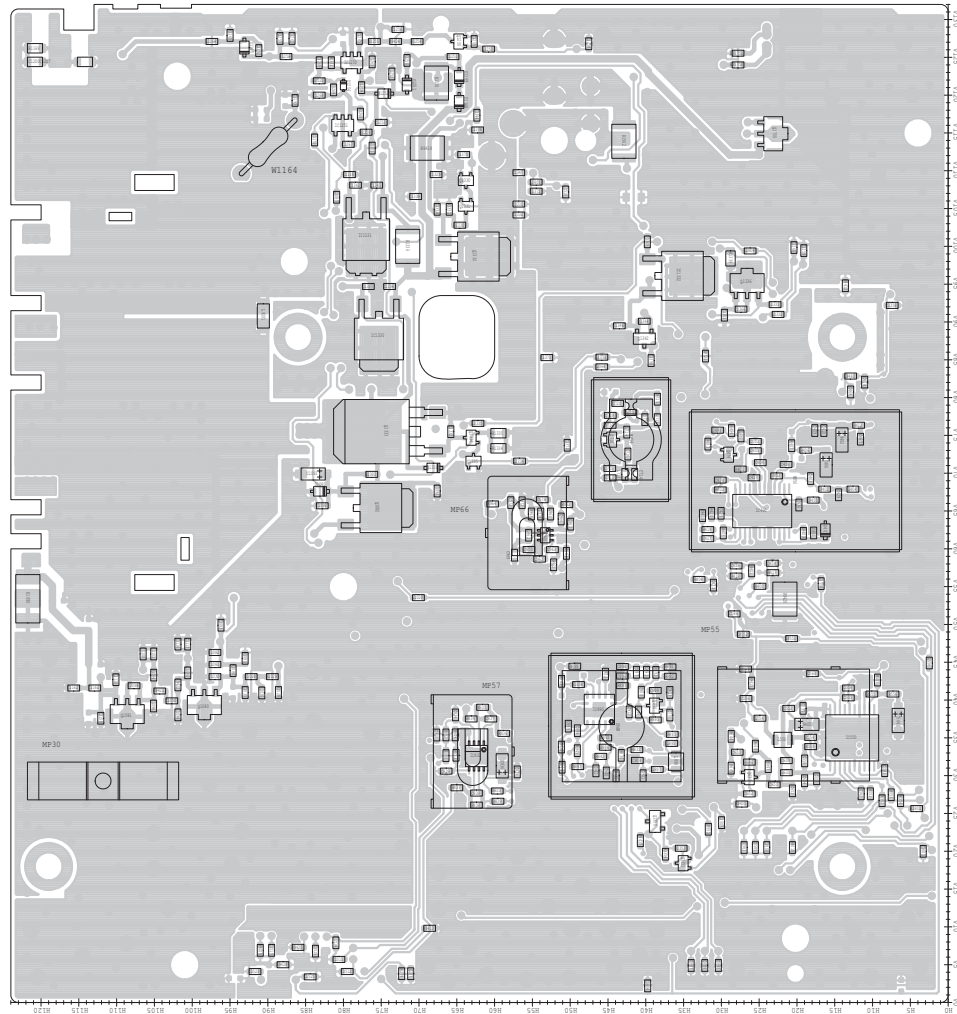
J1800	
30	BEEP
29	AMUT
	FANC
	VCTL
	GND
	TXS
	RXS
	NC
	+3
	HVL
	NC
	HVL
	NC
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	PWRS
2	
1	

J1602	
16	SHIFT
15	UNLK
	GND
	GND
	PSCK
	PDAT
	P2RS
	P2ST
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	GND
	TXSW
	DAF
1	

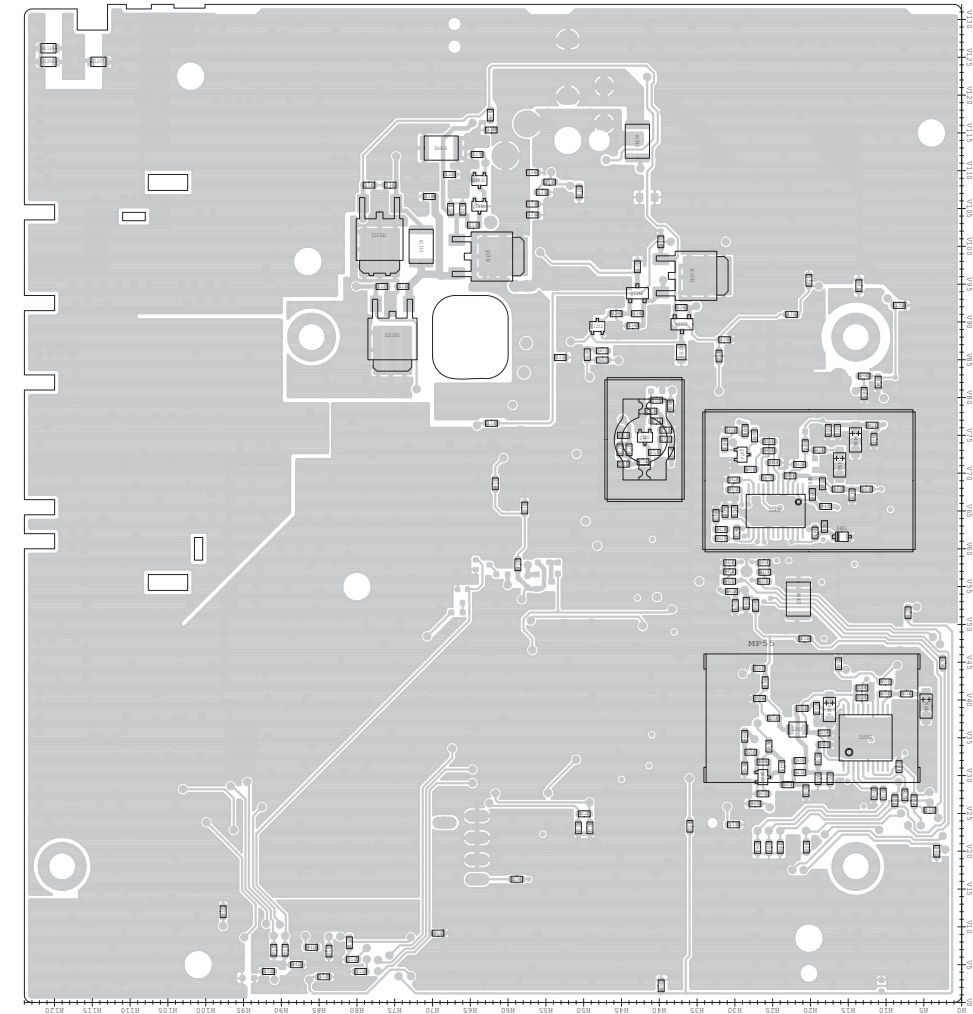
J1801	
1	IBAS
	OBAS
	NGND
	SCAN
	THER
	FMUT
	ADSW
	DAMOD
	GND
	WNS
	MGND
	GND
	MMUT
	GND
	MPE
	+5A
	RSSI
	TXD
	CENV
	NC
	NC
	MUID
29	
2	
30	

The combination of this page and next page shows the top side and bottom side of actual P.C. board.

• MAIN-T-2 UNIT
(BOTTOM VIEW)

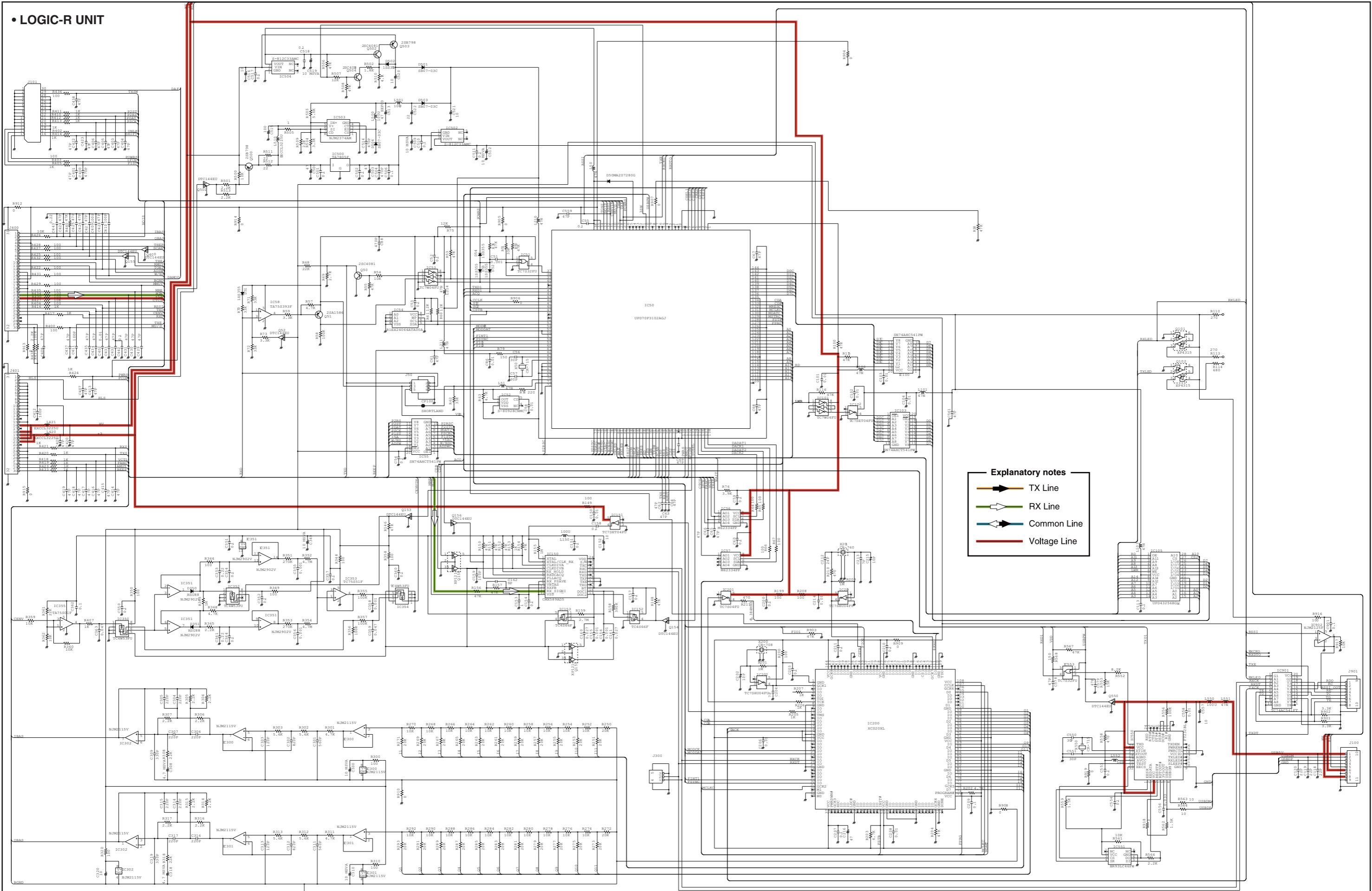


• MAIN-R-2 UNIT
(BOTTOM VIEW)



VOLTAGE DIAGRAM

• LOGIC-R UNIT

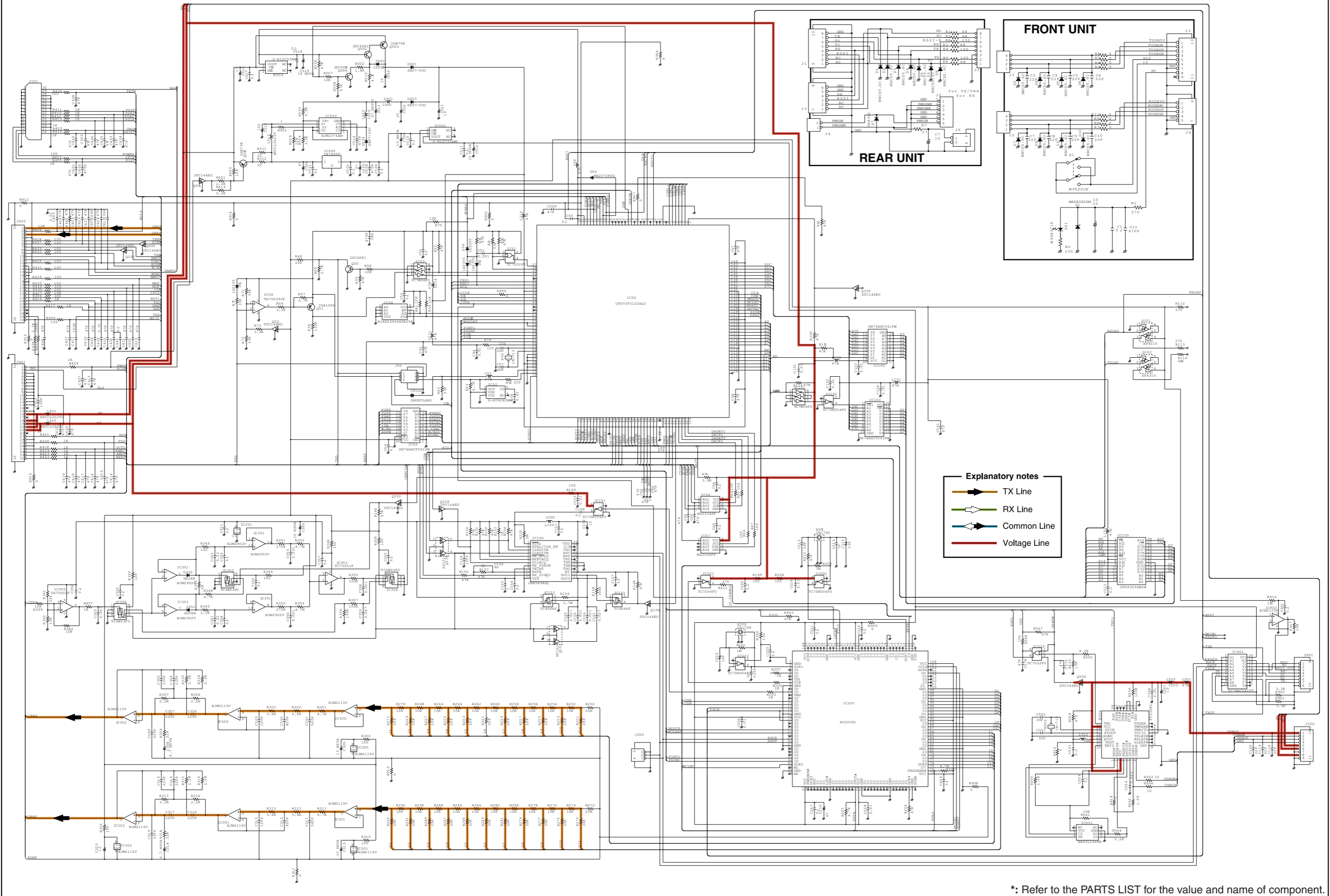


Explanatory notes

- TX Line
- RX Line
- Common Line
- Voltage Line

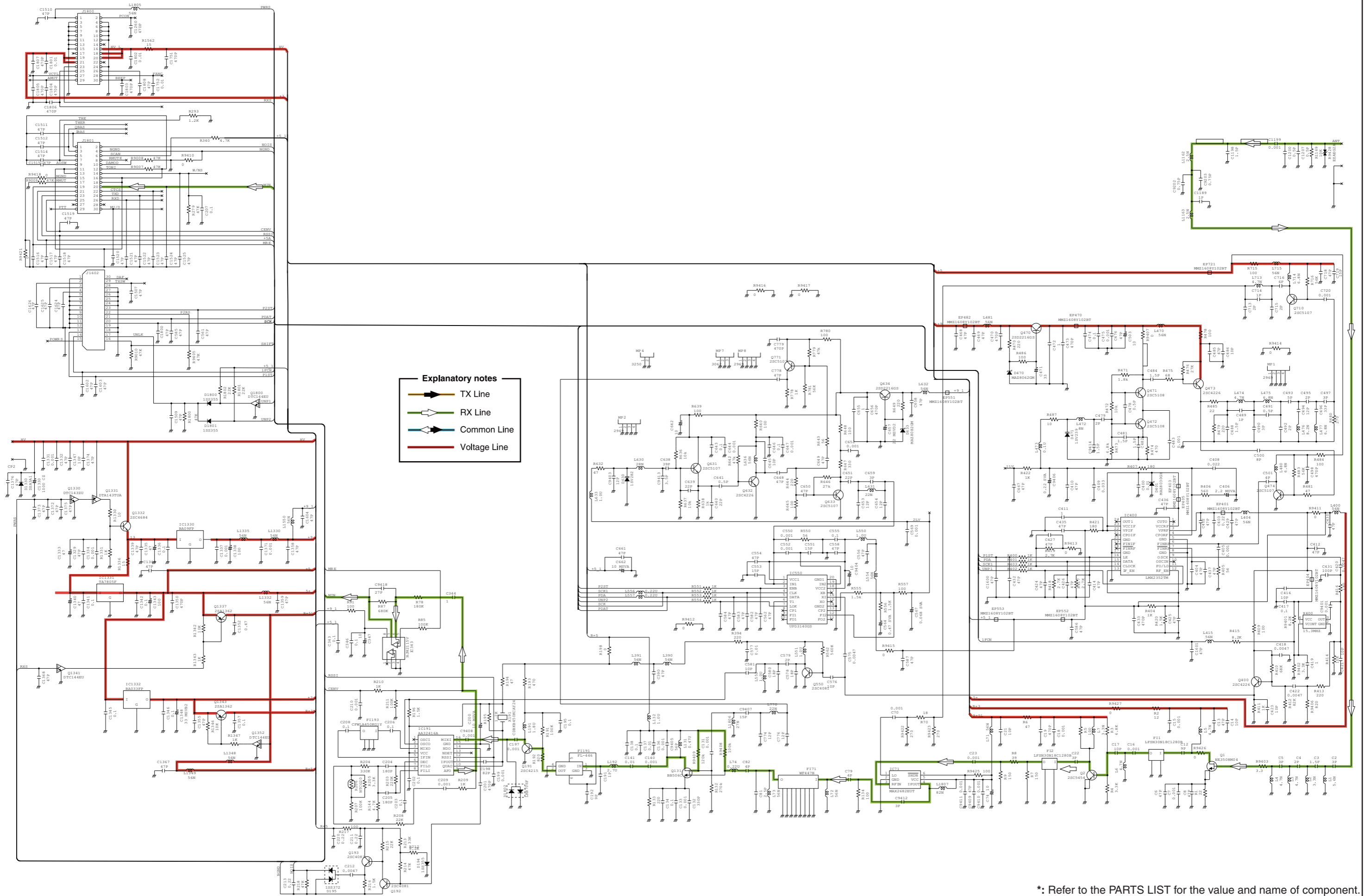
*: Refer to the PARTS LIST for the value and name of component.

• LOGIC-T UNIT



*: Refer to the PARTS LIST for the value and name of component.

• MAIN-R-2 UNIT

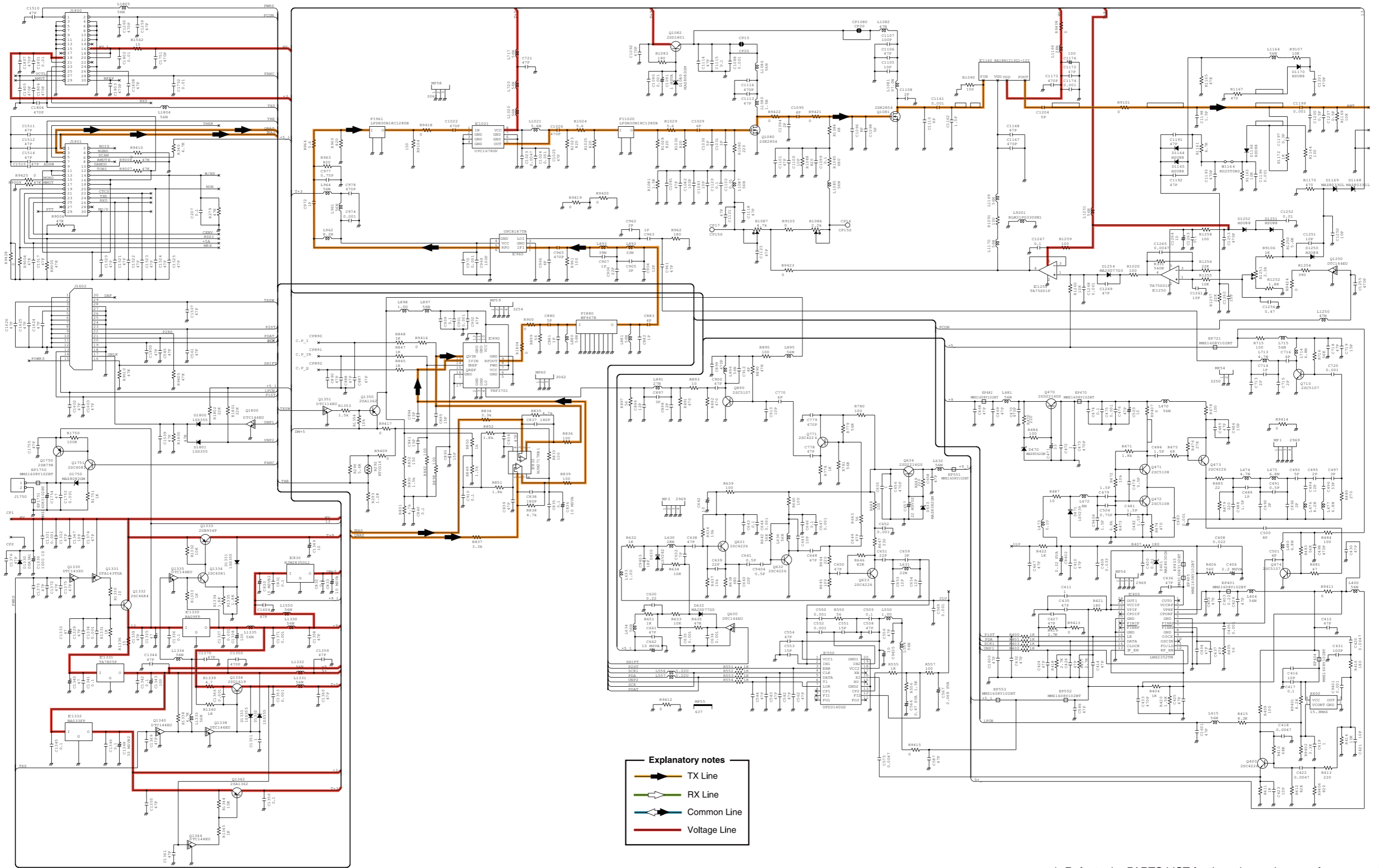


Explanatory notes

- TX Line
- RX Line
- Common Line
- Voltage Line

*: Refer to the PARTS LIST for the value and name of component.

• MAIN-T-2 UNIT



*: Refer to the PARTS LIST for the value and name of component.



SERVICE MANUAL

REPEATER CONTROLLER

ID-RP2V

S-14703XZ-C1
May. 2010

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the **ID-RP2** D-STAR REPEATER SYSTEM at the time of

MODEL	VERSION
ID-RP2V	USA
	EUR

To upgrade quality, any electrical or mechanical parts and internal circuits are subject to change without notice or obligation.

DANGER

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. This will ruin the transceiver.

DO NOT expose the transceiver to rain, snow or any liquids.

DO NOT reverse the polarities of the power supply when connecting the transceiver.

DO NOT apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the transceiver's front end.



ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-Digit Icom parts number
2. Component name and informations
3. Equipment model name and unit name
4. Quantity required

<SAMPLE ORDER>

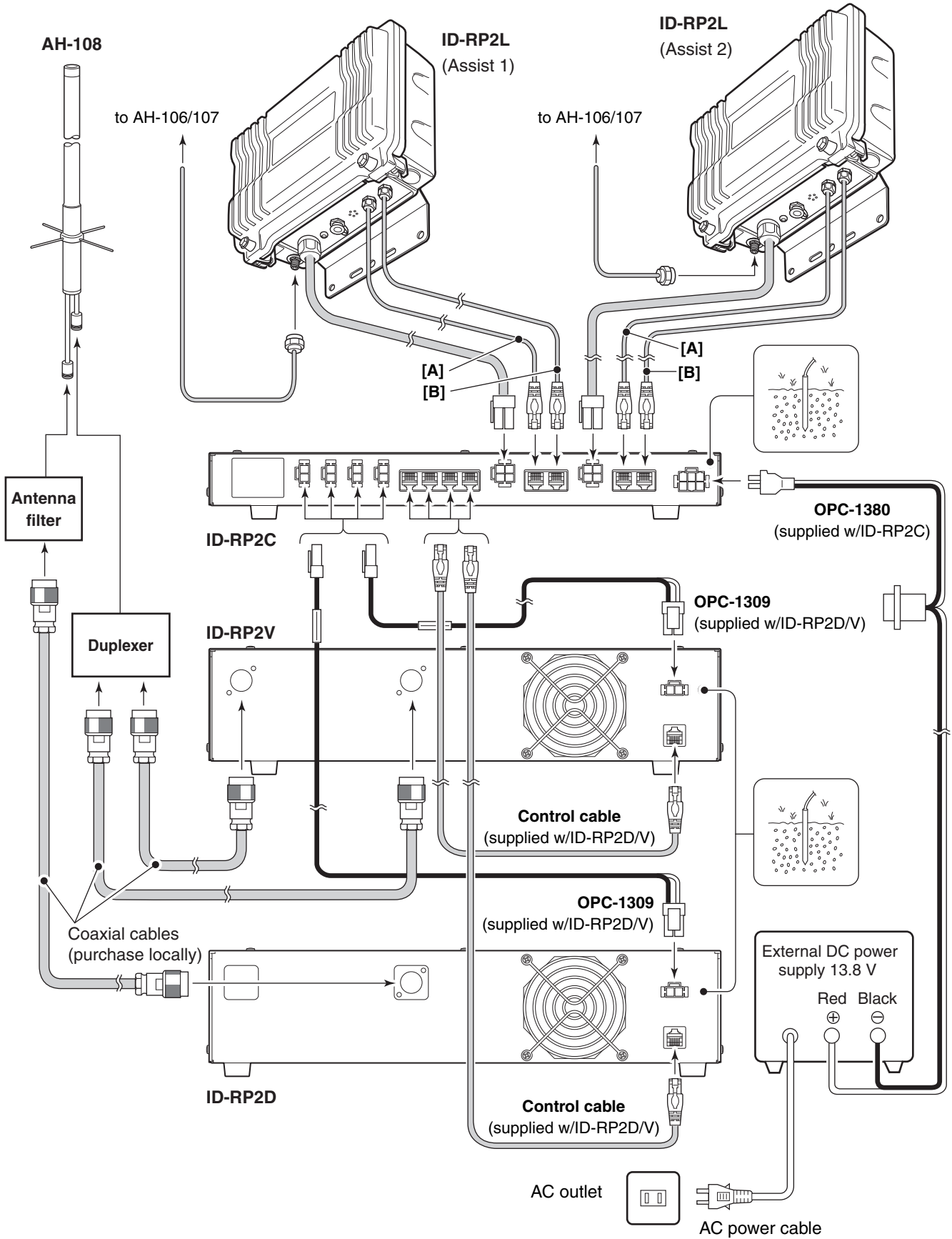
1130009850 S.IC TC74LCX245FT ID-RP2C MAIN UNIT 5 pieces
8810002950 Screw BiH M3x6 SUS ID-RP2C Cover 10 pieces

Addresses are provided on the inside back cover for your convenience.

REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 50 dB to 60 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

• SYSTEM CONNECTION



SERVICE MANUAL

1.2 GHz DIGITAL VOICE REPEATER

ID-RP2V

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SECTION 2 INSIDE VIEWS

SECTION 3 DISASSEMBLY INFORMATION

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4-2	TRANSMITTER CIRCUITS	E-4-2
4-3	PLL CIRCUITS	E-4-3
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4-5	PORT ALLOCATION	E-4-5

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SECTION 6 MECHANICAL PARTS AND DISASSEMBLY

SECTION 7 SEMI-CONDUCTOR INFORMATION

SECTION 8 BOARD LAYOUTS

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8-2	MAIN-T UNIT	E-8-3
8-3	LOGIC-R/T UNIT	E-8-5
8-4	FRONT UNIT	E-8-7
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SECTION 10 BLOCK DIAGRAM

SECTION 11 VOLTAGE DIAGRAMS

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11-3	LOGIC-R UNIT	E-11-7
11-4	LOGIC-T UNIT	E-11-9

SECTION 1 SPECIFICATIONS

■ GENERAL

• Frequency range	: Transmit 1240.000–1300.000 MHz Receive 1240.000–1300.000 MHz
• Type of emission	: F1D* (GMSK) *F7W for system operation
• Communication speed	: 4.8 kbps
• Frequency resolutions	: 5, 6.25 kHz
• Frequency stability	: ± 2.5 ppm (based on 25°C; +77°F)
• Usable temperature range	: –10°C to +50°C; +14°F to +122°F
• Antenna connectors	: Type-N (50 Ω) \times 2
• Power supply requirement	: 13.8 V DC \pm 15% (Negative ground)
• Current drain	: Transmit (High) Less than 7.0 A (Low) Less than 3.0 A Receive (Stand-by) Less than 1.0 A
• Dimensions (proj. not included)	: 483(W) \times 88(H) \times 428(D) mm; 19(W) \times 3 ¹⁵ / ₃₂ (H) \times 16 ²⁷ / ₃₂ (D) in
• Weight (Approx.)	: 7.5 kg; 16 lb 9 oz

■ TRANSMITTER

• Output power (at 13.8 V DC)	: High 6–12 W Low 0.5–1.2 W
• Modulation system	: Quadrature (243.95 MHz)
• Occupied bandwidth	: Less than 5.5 kHz
• Spurious emissions	: Less than –50 dB

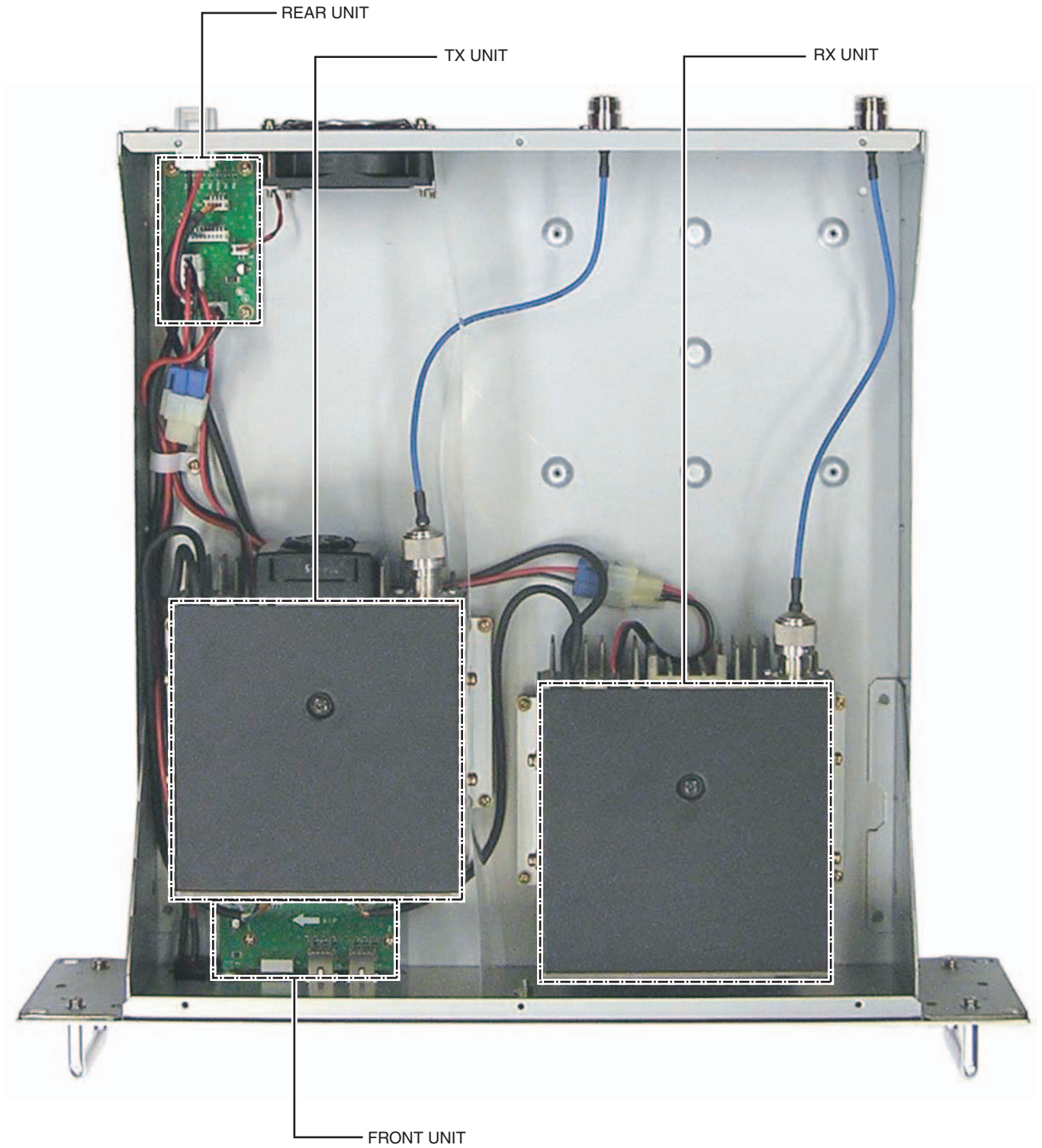
■ RECEIVER

• Receive system	: Triple-conversion superheterodyne system
• Intermediate frequencies	: 1st 243.95 MHz 2nd 31.05 MHz 3rd 450 kHz
• Sensitivity (BER 1×10^{-2})	: Less than –7 dB μ (0.45 μ V)
• Selectivity	: More than 6 kHz/6 dB Less than 18 kHz/50 dB
• Spurious and image rejection	: More than 60 dB (General) More than 50 dB (IF, IF/2)
• Receive spurious	: Less than –57 dBm

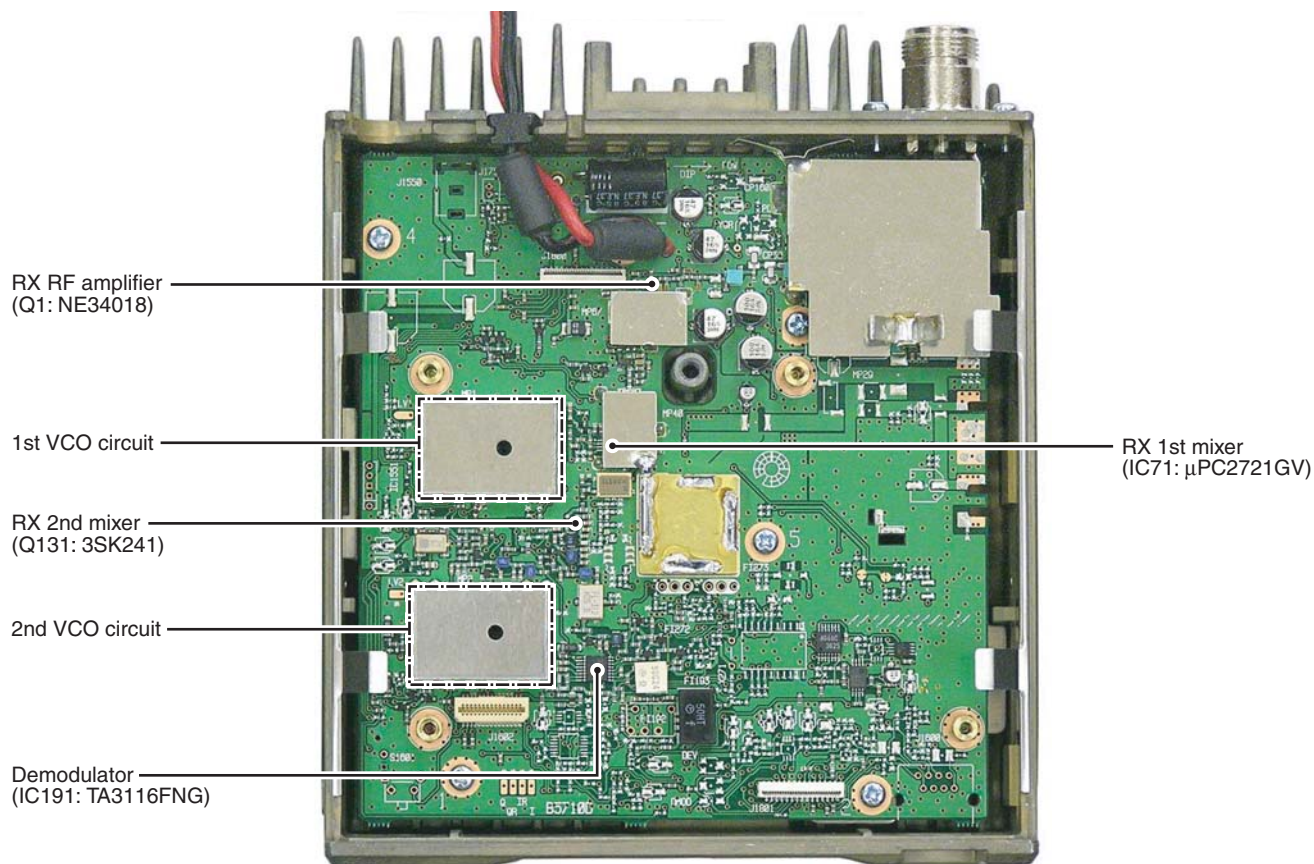
All stated specifications are subject to change without notice or obligation.

SECTION 2 INSIDE VIEWS

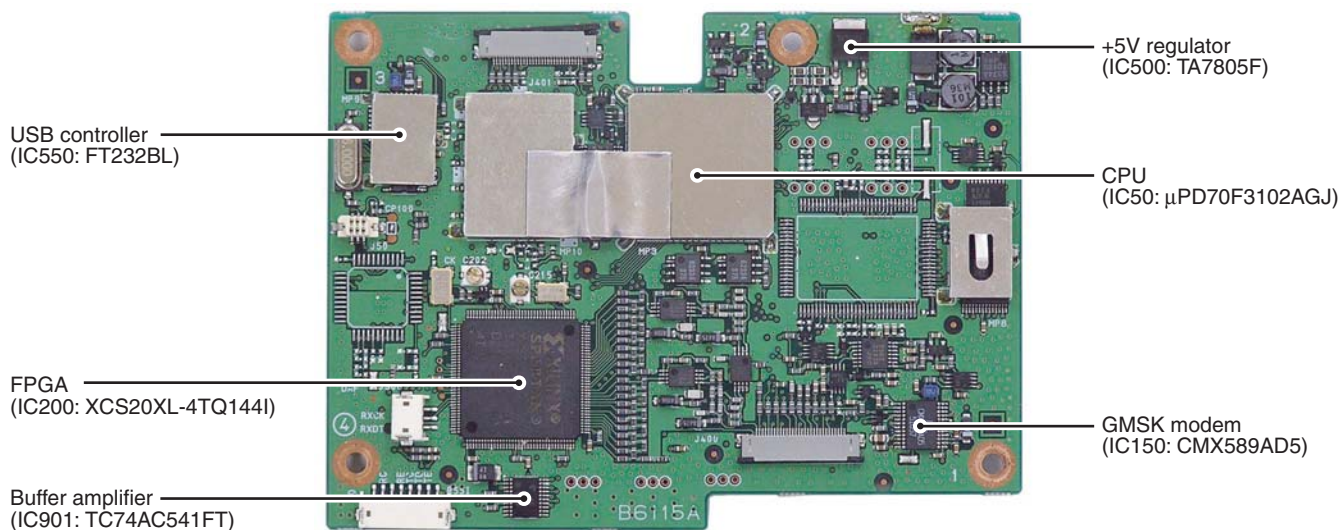
- OVERALL



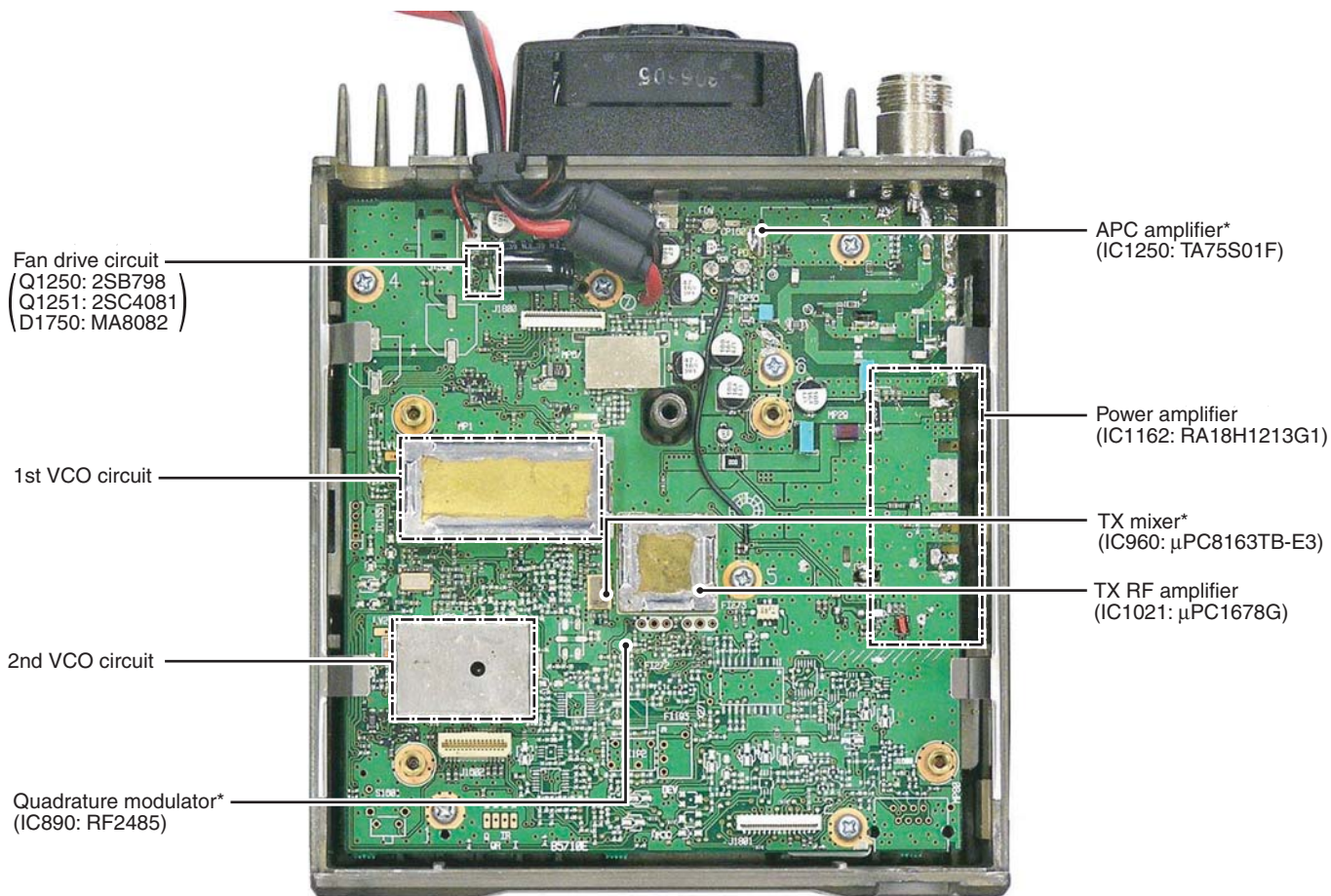
• MAIN-R UNIT



• LOGIC-T/R UNIT



• MAIN-T UNIT

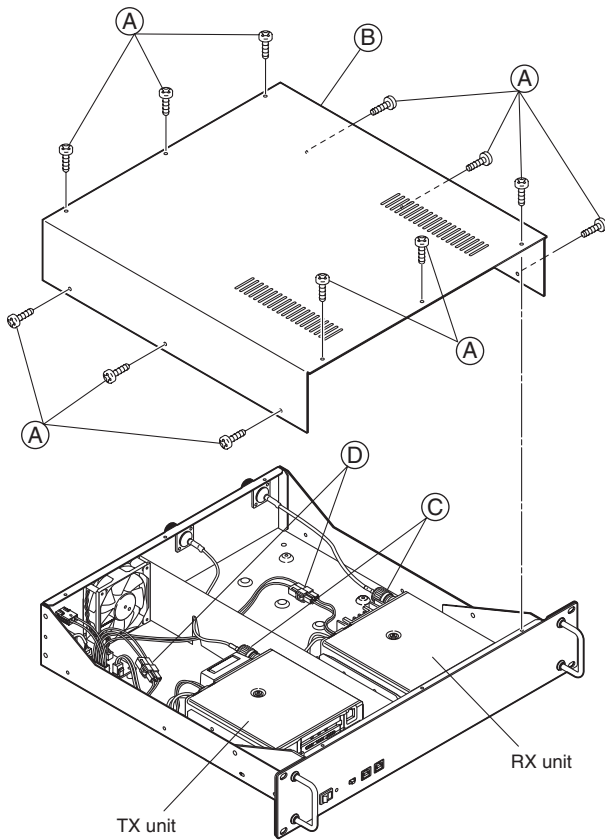


*: Located under side of this points.

SECTION 3 DISASSEMBLY INSTRUCTIONS

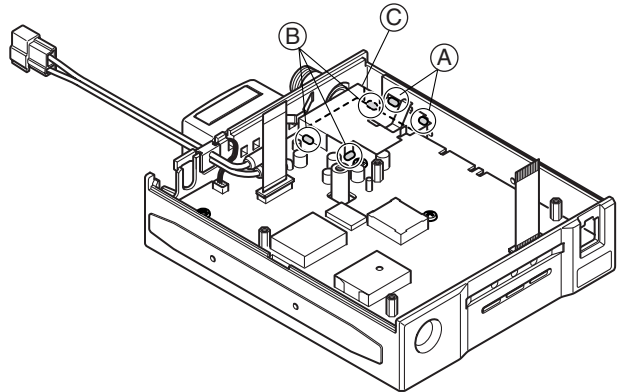
• REMOVING THE COVER

- ① Unscrew 12 screws (A), and remove the cover (B).
- ② Disconnect 2 cables (C), and disconnect 2 cables (D).



• REMOVING THE MAIN-T/R UNIT

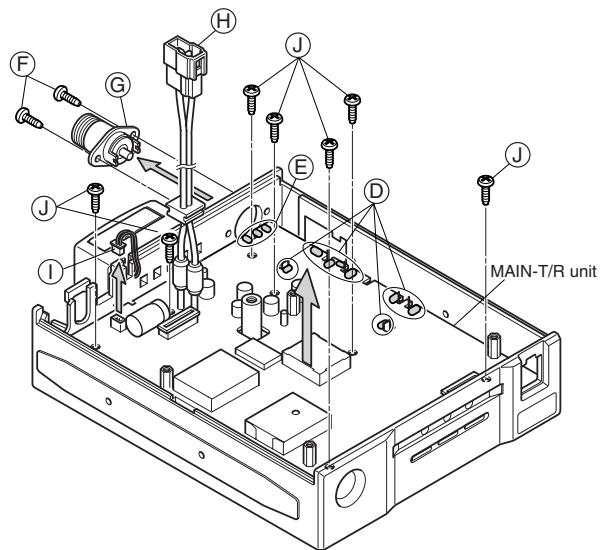
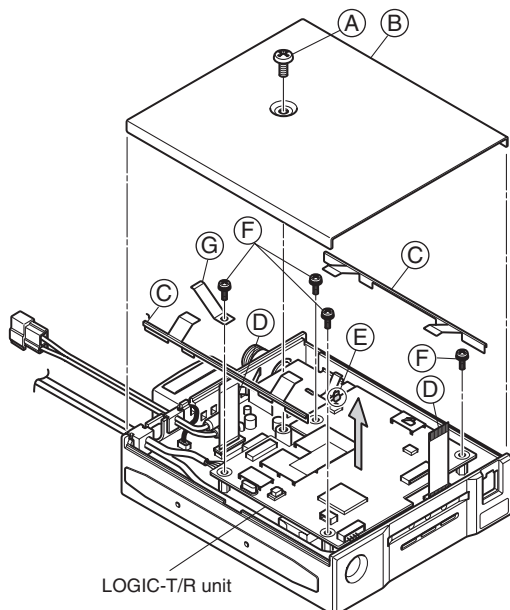
- ① Unsolder 2 points (A). (MAIN-T unit only)
- ② Unsolder 3 points (B), and remove the ANT plate (C).



- ③ Unsolder 8 points (D). (MAIN-T unit only)
- ④ Unsolder 3 points (E).
- ⑤ Unscrew 2 screws (F), and remove the ANT connector (G).
- ⑥ Take off the cable (H) from the chassis.
- ⑦ Disconnect the cable (I). (MAIN-T unit only)
- ⑧ Unscrew 7 screws (J), and take off the MAIN-T/R unit.

• REMOVING THE LOGIC-T/R UNIT

- ① Unscrew 1 screw (A), and remove the cover (B).
- ② Remove 2 main shield plates (C).
- ③ Disconnect 2 cables (D), and unsolder 1 point (E).
- ④ Unscrew 4 screws (F), and remove the earth spring (G).
- ⑤ Take off the LOGIC-T/R unit.



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 RF CIRCUIT (MAIN-R UNIT)

The RF circuit amplifies signals within the range of frequency coverage and filters out-of-band signals.

The received signals from the receive antenna connector (CASE; W6) are applied to the MAIN-R unit via J1 (CHASSIS-R). The applied signals are passed through the low-pass filter which contains strip-line, L1162, L1193, C1189, C1198, C9202 and C9203. The filtered signals are through the high-pass filter (L1-L4, C2-C5) and then applied to the RF amplifier (Q1). The amplified signals are passed through the bandpass filter (F1) and then applied to another RF amplifier (Q2). The amplified signals are passed through another bandpass filter (F2) to suppress unwanted signals.

The filtered signals are applied to the 1st mixer circuit.

4-1-2 1ST MIXER AND 1ST IF CIRCUITS (MAIN-R UNIT)

The 1st mixer circuit converts the received signals into fixed frequency of the 1st IF signal with the 1st LO signal. By changing the 1st LO signal, only the desired frequency passes through the bandpass filter at the next stage of the 1st mixer circuit.

The RF signals from the bandpass filter (F2) are mixed with the 1st LO signal, where come from the 1st VCO circuit (Q471, Q472, D471), at the 1st mixer circuit (IC71) to produce a 243.95 MHz 1st IF signal. The 1st IF signal is passed through the bandpass filter (F171) to suppress unwanted signals and pass only the desired signals.

The filtered signal is applied to the 2nd IF circuit.

4-1-3 2ND MIXER AND 2ND IF CIRCUITS (MAIN-R UNIT)

The 2nd mixer circuit converts the 1st IF signal into the 2nd IF signal with the 2nd LO signal.

The filtered 1st IF signal from the bandpass filter (F171) is mixed with the 2nd LO signal (275.00 MHz), where come from the 2nd VCO circuit (Q631, D630), at the 2nd mixer circuit (Q131) to produce a 31.05 MHz 2nd IF signal. The 2nd IF signal is passed through the MCF (F1191). The filtered signal is applied to the IF amplifier (Q191) and then applied to the 3rd mixer circuit in the demodulator IC (IC191).

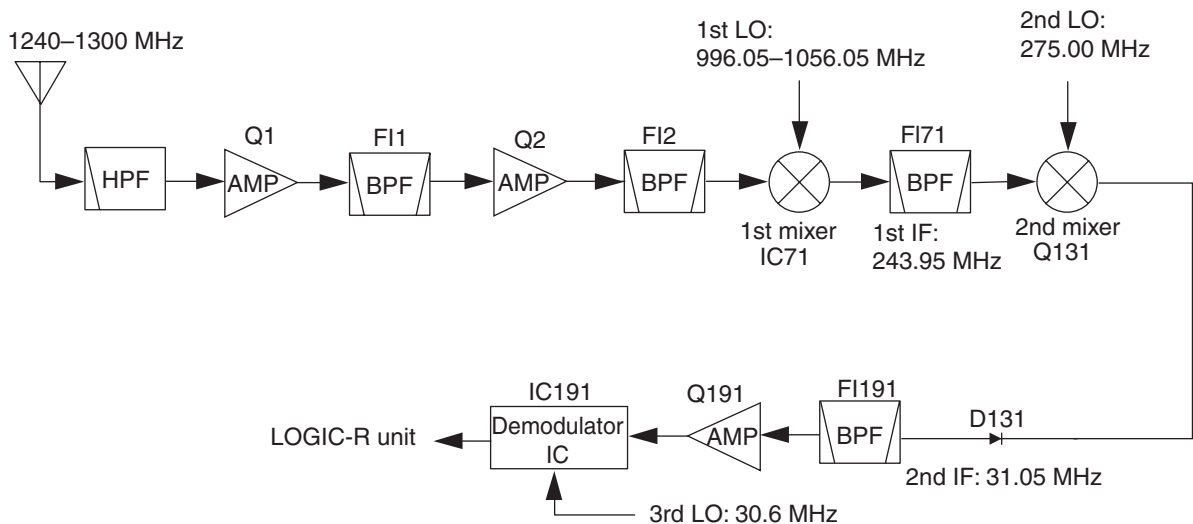
4-1-4 DEMODULATOR CIRCUIT (MAIN-R UNIT)

The demodulator IC (IC191) contains the 3rd mixer, limiter amplifier, quadrature detector, active filter and noise amplifier, etc.

The amplified 2nd IF signal from the IF amplifier (Q191) is applied to the 3rd mixer section of the demodulator IC (IC191, pin 16) and is then mixed with the 3rd LO signal to be converted into a 450 kHz 3rd IF signal. The 3rd IF signal from the 3rd mixer section (IC191, pin 3) passes through the ceramic filter (F1193) to remove unwanted heterodyned frequencies. The filtered signal is amplified at the limiter amplifier section (IC191, pin 5) and then applied to the quadrature detector section (IC191, pins 10, 11) to demodulate the digital audio or low speed data signals.

The 3rd LO signal (30.6 MHz) is produced at the 1st PLL circuit by doubling its reference frequency (X400: 15.3 MHz) at the doubler circuit (Q550).

• RF AND IF CIRCUITS



The digital audio or low speed data signals are output from pin 9 of the demodulator IC (IC191) and are amplified at IC343 (pins 6, 7).

The amplified signals are applied to the LOGIC-R unit via J1801 (pin 20).

4-1-5 DIGITAL CIRCUITS (LOGIC-R UNIT)

The digital circuits convert the demodulated digital audio or low speed data signals format for communication to ID-RP2C.

The demodulated digital audio or low speed data signals from the amplifier (MAIN-R unit; IC343, pin 7) are applied to the GMSK MODEM (IC150, pin 11) via J400 (pin 20). The applied signals are synchronized with the clock signal, then the synchronized signals are applied to the CPU (IC50) via the FPGA IC (IC200).

The output signals from the CPU (IC50) are amplified at the buffer amplifier (IC901) and then applied to the REAR unit via J901.

The amplified signals are applied to the connected repeater controller (ID-RP2C) via [CONT I/O] (REAR unit; J2).

4-2 TRANSMITTER CIRCUITS

4-2-1 DIGITAL CIRCUIT (LOGIC-T UNIT)

The digital circuits convert the digital audio or low speed data signals for transmit.

The digital audio or low speed data signals from the connected repeater controller (ID-RP2C) are amplified at the buffer amplifier (IC901) and then applied to the CPU (IC50) via [CONT I/O] (REAR unit; J2).

The applied digital audio or low speed data signals to the CPU (IC50) are processed and then applied to the FPGA IC (IC200) to split to the I and Q baseband signals for quadrature modulation. The I/Q baseband signals output from pins 75–80, 82–86 (IC200; for I signals), and 87–89, 92–99 (IC200; for Q signals) and then applied to the D/A converters (R250–R271 for I signals, R272–R293 for Q signals).

The converted I/Q baseband signals are passed through the baseband filters (IC300, IC302; for I signal), and (IC301, IC302; for Q signal) and then applied to the MAIN-T unit via J400 (pin 1 for I signal, pin 3 for Q signal).

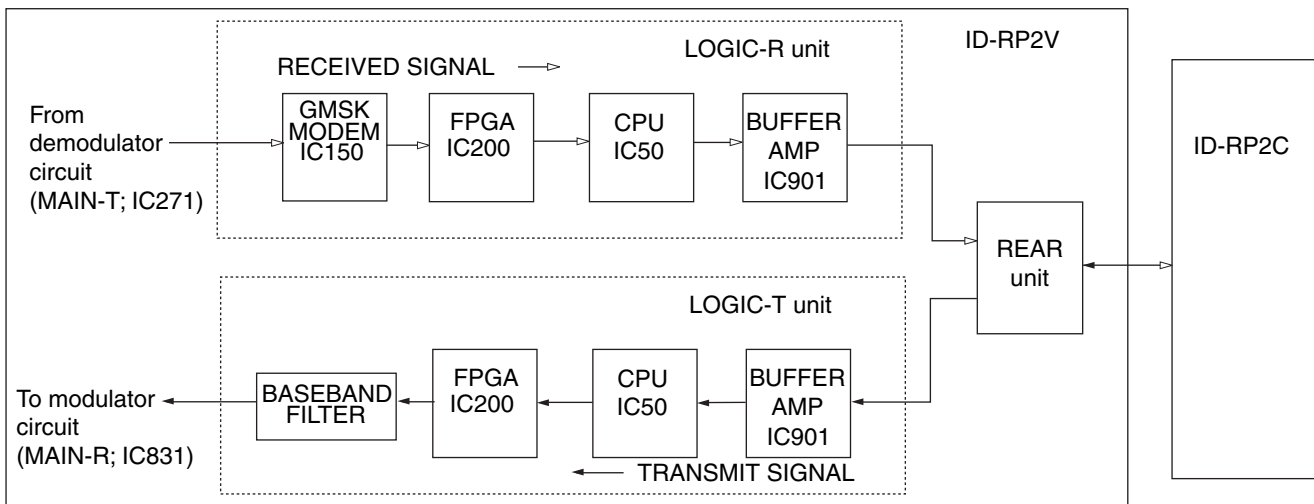
4-2-3 MODULATION CIRCUIT (MAIN-T UNIT)

The modulation circuit modulates the 2nd LO signal at the quadrature modulation circuit (IC890) using the I/Q baseband signals from the LOGIC-T unit.

The I/Q baseband signals from the LOGIC-T unit are amplified at the I/Q baseband amplifiers (IC832, pins 1, 2 for I signal, pins 6, 7 for Q signal) via J400 (pin 1 for I signal, pin 3 for Q signal) and then applied to amplifier section of the quadrature modulator (IC890, pin 4 for I signal, pin 7 for Q signal). The 2nd LO signal is also applied to the $\pm 45^\circ$ phase splitter section of the quadrature modulator (IC890, pin 8) and then phase shifted and split 2nd LO signals are amplified at the LO amplifier sections. The amplified LO signals are modulated with the I/Q baseband signals at I/Q modulator sections and then combined at the combining amplifier section. The modulated signal is output from pin 14 (IC890) after amplified at the RF amplifier section.

The modulated signal is passed through the bandpass (FI880) and low-pass (L892, L893, C904–C907) filters and then applied to the 1st mixer circuit.

• DIGITAL CIRCUITS



4-2-4 1ST MIXER CIRCUIT (MAIN-T UNIT)

The filtered signal from the low-pass filter (L892, L893, C904–C907) is applied to the 1st mixer circuit (IC960, pins 1, 6). The applied signal is mixed with the 1st LO signal coming from the 1st VCO circuit (Q471, Q472, D471) via the buffer amplifiers (Q473, Q710) to convert into the RF signal. The RF signal from the 1st mixer circuit (IC960, pin 6) is passed through the bandpass filter (F1961) and then amplified at the RF amplifier (IC1021). The amplified signal is passed through the bandpass filter (F11020) to suppress spurious components.

The filtered signal is applied to the pre-drive circuit.

4-2-5 DRIVE/POWER AMPLIFIER CIRCUITS (MAIN-T UNIT)

The drive/power amplifier circuits amplify the RF signal to the to the output level.

The filtered RF signal from the bandpass filter (F11020) is amplified at the pre-drive (Q1080), drive (Q1081) and power (IC1160) amplifiers to obtain a stable 10 W of output power.

The power amplified signal from the power amplifier (IC1160, pin 4) is passed through the SWR detector circuit (D1166, D1170), low-pass filter which contains strip-line and C1198, and then applied to the transmit antenna connector (CASE; W5) via J1 (CHASSIS-T).

4-2-6 APC CIRCUIT (MAIN-T UNIT)

The APC circuit protects power amplifier from a mismatched output load and stabilizes the output power.

The SWR detector circuit (D1166, D1170) detects the forward signals and reflection signals, and converts it into DC voltage. The output voltage is at a minimum level when the antenna impedance is matched with 50 Ω and is increased when it is mismatched.

The detected voltage is applied to the APC amplifier (IC1250, pins 3, 4) and is compared with the reference voltage which is supplied from the CPU (LOGIC-T unit; IC50, pin 85) as "PCON" signal.

When antenna impedance is mismatched, the detected voltage exceeds the power setting voltage. The output voltage of the APC amplifiers (IC1250, IC1251) controls the bias voltage of the power amplifier (IC1160) to reduce the output power.

4-3 PLL CIRCUITS

4-3-1 PLL CIRCUITS (MAIN-R/MAIN-T UNITS)

The PLL circuit provides stable oscillation of the 1st LO frequencies and 2nd LO frequency. The PLL output compares the phase of the divided VCO frequency to the reference frequency. The PLL output frequency is controlled by the divided ratio (N-data) of a programmable divider.

4-3-2 1ST PLL CIRCUITS (MAIN-R/MAIN-T UNITS)

The 1st PLL circuit oscillates the 1st LO frequencies, and the signals are applied to the 1st mixer circuit. The oscillated signals from the 1st VCO circuit (Q471, Q472, D471) are applied to the buffer amplifiers (Q473, Q474) and are then applied to the PLL IC (IC400, pin 6).

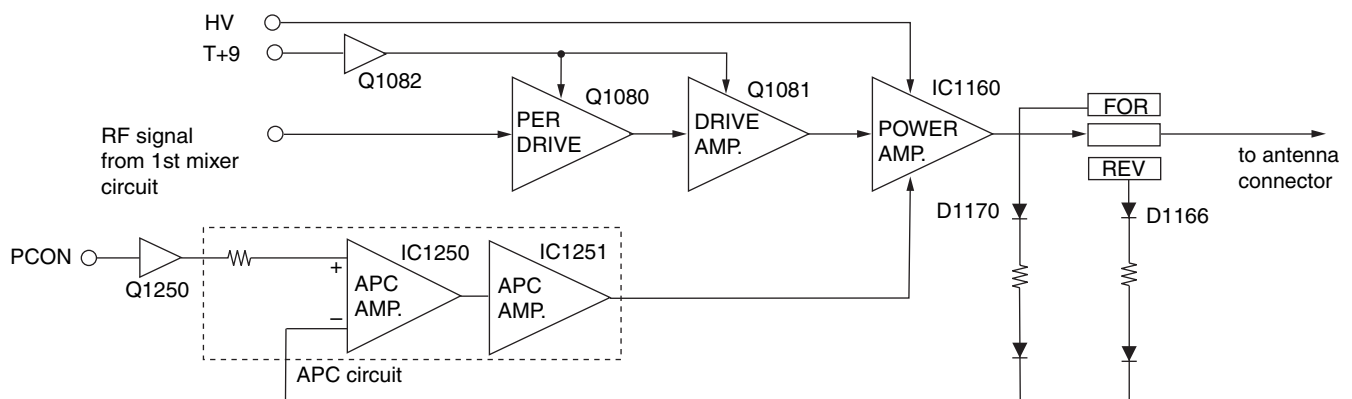
The PLL IC contains a prescaler, programmable counter, programmable divider and phase detector, etc.

The applied signal is divided at the prescaler and programmable counter section by the N-data ratio from the CPU (LOGIC-R/LOGIC-T units; IC50). The divided signal is detected on phase at the phase detector using the reference frequency (X400: 15.3 MHz) and output from pin 4 (IC400). The output signal is passed through the loop filter and is then applied to the 1st VCO circuit.

The oscillated signal at the 1st VCO is buffer amplified at Q473 and then passed through the bandpass filter (L474–L477, C488–C497).

The filtered signal is applied to the buffer amplifier (Q710) and then applied to the RX switch (MAIN-R unit; D711), and TX switch (MAIN-T unit; D710).

• APC CIRCUITS



RECEIVE SIGNAL (MAIN-R UNIT)

The receive 1st LO signal from the RX switch (D711) is applied to the 1st mixer circuit (IC71).

TRANSMIT SIGNAL (MAIN-T UNIT)

The transmit signal from the TX switch (D710) is applied to the 1st mixer circuit (IC960).

4-3-3 2ND PLL CIRCUIT (MAIN-R/MAIN-T UNITS)

The 2nd PLL circuit oscillates the 2nd LO frequency, and the signal is applied to the 2nd mixer circuit and quadrature modulator.

The signal oscillated at the 2nd VCO circuit (Q631, D630) is amplified at the buffer amplifiers (Q632, Q633) via low-pass filter (L631, C653, C654) and then applied to the PLL IC (IC550, pin 19). The applied signal is divided at the prescaler and programmable counter section by the N-data ratio from the CPU (LOGIC-R/LOGIC-T units; IC50). The divided signal is detected on phase at the phase detector using the reference frequency (X400: 15.3 MHz) and output from pin 13 (IC550).

The detected signal is passed through the loop filter (R555–R557, C564, C567) and then applied to the 2nd VCO circuit.

The oscillated signal at the 2nd VCO is amplified at the buffer amplifiers (Q632 Q771) and is then applied to the RX switch (MAIN-R unit; D771), and TX switch (MAIN-T unit; D770).

RECEIVE SIGNAL (MAIN-R UNIT)

The receive 2nd LO signal from the RX switch (D771) is applied to the 2nd mixer circuit (Q131).

TRANSMIT SIGNAL (MAIN-T UNIT)

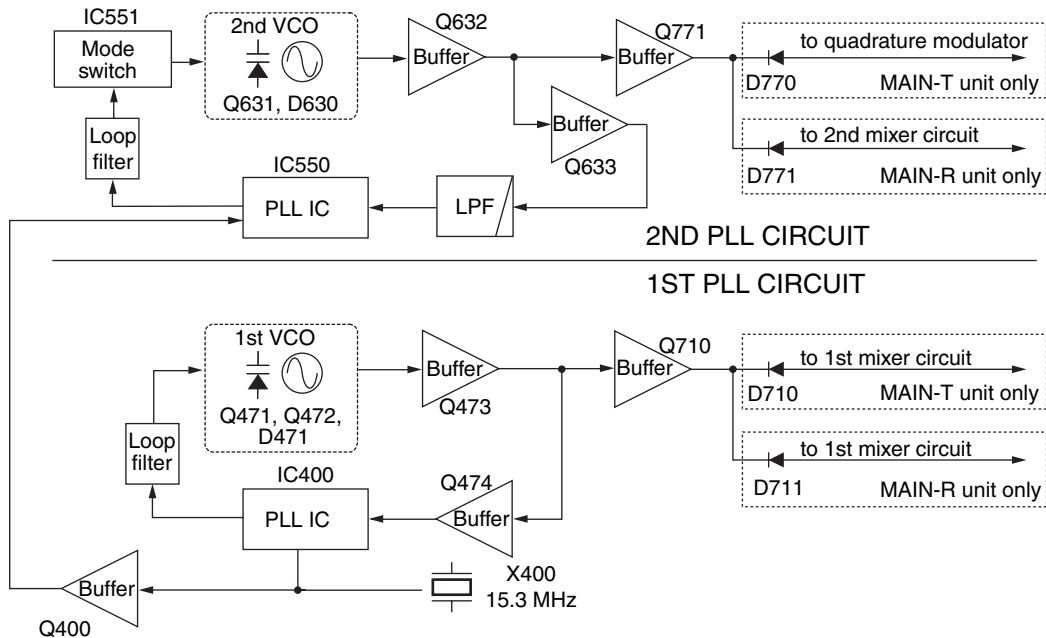
The transmit signal from the TX switch (D770) is applied to the quadrature modulator (IC890).

4-4 POWER SUPPLY CIRCUITS

4-4-1 LOGIC-R/LOGIC-T UNITS VOLTAGE LINE

Line	Description
5V	Common 5 V controlled by the +5 V regulator circuit (IC500, Q500, Q501) using the "PWRS" signal from the CPU (IC50, pin 101). The output voltage is applied to the baseband filters (IC300–302), etc.
3.3V	Common 3.3 V converted from the 5V line by the 3.3V regulator circuit (IC502). The output voltage is applied to the FPGA IC (IC200) and buffer amplifier (IC901), etc.
3.3V	Common 3.3 V converted from the 5V line by the 3.3V regulator circuit (IC504). The output voltage is applied to the CPU (IC50) and A/D converter (IC55), etc.

• PLL CIRCUITS



4-4-2 MAIN-R/MAIN-T UNITS VOLTAGE LINE

Line	Description
HV	The voltage from a DC power supply.
VCC	The same voltage as the HV line which is controlled by the power switching circuit (Q23, Q24). When the power switch is pushed, the CPU outputs the "PWR" control signal to the power switching circuit to turn the circuit ON.
+9	Common 9 V converted from the HV line at the +9 regulator circuit (IC1330). The output voltage is applied to the 1st VCO (Q471), etc.
+5	Common 5 V converted from the +9V line at the 5 V regulator circuit (IC1331). The output voltage is applied to the APC amplifier (IC1251) and buffer amplifier (Q710), etc.
DM+5 (MAIN-T unit only)	Common 5 V converted from the +9V line at the 5 V regulator circuit (IC830). The output voltage is applied to the modulation amplifiers (IC831, IC832), etc.
T+9 (MAIN-T unit only)	Transmit 9 V controlled by the T+9 regulator circuit (Q1333, Q1334, D1331) using the "TXS" signal from the CPU (LOGIC-T unit; IC50, pin 94). The output voltage is applied to the APC amplifier (IC1250), etc.
T+5 (MAIN-T unit only)	Transmit 5 V controlled by the T+5 regulator circuit (Q1336, D1332, D1333) using the "TXS" signal from the CPU (LOGIC-T unit; IC50, pin 94). The output voltage is applied to the RF amplifier (IC1021), etc.
R+5 (MAIN-R unit only)	Receive 5 V controlled by the R+5 regulator circuit (Q1337) using the "RXS" signal from the CPU (LOGIC-R unit; IC50, pin 95). The output voltage is applied to the RF amplifier (Q2) and 1st mixer (IC71), etc.
T+3 (MAIN-T unit only)	Transmit 3 V controlled by the T+3 regulator circuit (Q1342) using the "TXS" signal from the CPU (LOGIC-T unit; IC50, pin 94). The output voltage is applied to the 1st mixer (IC960), etc.
R+3 (MAIN-R unit only)	Receive 3 V controlled by the R+3 regulator circuit (Q1343) using the "RXS" signal from the CPU (LOGIC-R unit; IC50, pin 95). The output voltage is applied to the RF amplifier (Q1), etc.

4-5 PORT ALLOCATIONS

4-5-1 CPU (LOGIC-R/LOGIC-T UNITS; IC50)

Pin number	Port name	Description
42	TXD1	Output data signals to the USB controllers (IC550, pin 24).
43	RXD1	Input port for data signals from the USB controllers (IC550, pin 25) via the (IC553).
53	SDA	I/O port for data signals from/to the EEPROMs (IC54, pin 5).
54	SCL	Outputs clock signal to the EEPROMs (IC54, pin 6).
71	RESET	Input port for reset signal form the reset ICs (IC52, pin 1).
72	P2RSC	Outputs control signal to the mode switches (MAIN-R/MAIN-T units; IC551, pin 5) via the level converter (IC55).
73	P2STC	Outputs strobe signal to the 2nd PLL ICs (MAIN-R/MAIN-T units; IC550, pin 3) via the level converter (IC55).
74	PDATC	Outputs the data signal to the 1st and 2nd PLL ICs (MAIN-R/MAIN-T units; IC400, pin 15, IC550, pin 5) via the level converter (IC55).
75	PSCKC	Outputs clock signal to the 1st and 2nd PLL ICs (MAIN-R/MAIN-T units; IC400, pin 14, IC550, pin 4) via the level converter (IC55).
76	P1STC	Outputs strobe signal to the 1st PLL ICs (MAIN-R/MAIN-T units; IC400, pin 16) via the level converter (IC55).
77	+5AC	Outputs control signal to the 5A and D+5 regulator circuits (MAIN-R/MAIN-T units; Q1345, Q1347) via the level converter (IC55). Low: While the +5 and D+5 regulators are activated.
85	PCON	Outputs control signal to the TX power controller (MAIN-T unit; Q1250).
86	ULCK	Input port for the PLL unlock signal. High: The PLL circuit is unlocked.
94	TXS	Outputs control signal to the T+5, T+3 regulator circuits (MAIN-T unit; Q1336, Q1342). High: During transmit.
95	RXS	Outputs control signal to the R+5, R+3 regulator circuits (MAIN-R unit; Q1337, Q1343). High: During receive.
103	AFCSW	Outputs control signal to AFC switch (IC352, pin 5).
105	DACK2	Outputs clock signal to the D/A converter (IC57, pin 7).
106	DADAT2	Outputs the data signal to the D/A converter (IC57, pin 6).
107	DACK1	Outputs clock signal to the D/A converter (IC56, pin 7).

Pin number	Port name	Description
108	DADAT1	Outputs the data signal to the D/A converter (IC56, pin 6).
128	FSTB	Outputs strobe signal to the FPGA IC (IC200).
129	MSTRC	Outputs strobe signal to the liner CODEC IC (IC1) and FPGA IC (IC200).
130	MDATC	Outputs the data signal to the liner CODEC IC (IC1) and FPGA IC (IC200).
131	MCLKC	Outputs clock signal to the liner CODEC IC (IC1) and FPGA IC (IC200).
132	MRESC	Outputs reset signal to the liner CODEC IC (IC1) and FPGA IC (IC200).

[MAIN-T UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C1802	4030006900	S.CER C1608 JB 1H 103K-T	T	42.5/112.3
C1803	4030006850	S.CER C1608 JB 1H 471K-T	T	28.6/104.1
C1804	4030006850	S.CER C1608 JB 1H 471K-T	T	32.4/103.3
C1805	4030006850	S.CER C1608 JB 1H 471K-T	T	27.8/101.5
C1806	4030006850	S.CER C1608 JB 1H 471K-T	T	32.4/99.7
C1807	4030006850	S.CER C1608 JB 1H 471K-T	T	42/101.4
C1808	4030007090	S.CER C1608 CH 1H 470J-T	T	38.8/112
C9101	4030009540	S.CER C1608 CH 1H 1R5B-T	T	66.8/58
J1602	6510021970	S.CNR AXN330C130P	T	26.2/21.8
J1750	6510009350	CNR B2B-ZR	T	25.4/125.5
J1800	6510021720	S.CNR 30FLT-SM1-TB	T	44/107.5
J1801	6510021720	S.CNR 30FLT-SM1-TB	T	87/5.8
W11	7030008240	S.RES ERJ12YJ0R00U	T	78.2/78.7
W296	7030003860	S.RES ERJ3GE JPW V	T	71/38.3
W340	7030003860	S.RES ERJ3GE JPW V	B	67.1/19.8
W404	7030003860	S.RES ERJ3GE JPW V	T	17.5/59.6
W428	7030003860	S.RES ERJ3GE JPW V	B	13.6/94.8
W429	7030003860	S.RES ERJ3GE JPW V	B	33.6/61.3
W480	7030003860	S.RES ERJ3GE JPW V	T	20.5/69.2
W550	7030003860	S.RES ERJ3GE JPW V	B	26/42.3
W700	7030003860	S.RES ERJ3GE JPW V	T	39/70.7
W840	7030003860	S.RES ERJ3GE JPW V	B	49.8/33.6
W841	7030003860	S.RES ERJ3GE JPW V	B	42.5/39.9
W896	7030000010	S.RES MCR10EZJH JPW (000)	B	42.4/85.8
W1021	7030003860	S.RES ERJ3GE JPW V	T	66.8/60.6
W1022	7030003860	S.RES ERJ3GE JPW V	T	33.3/53.5
W1026	7030003860	S.RES ERJ3GE JPW V	T	18.1/26
W1029	7030008240	S.RES ERJ12YJ0R00U	B	68.9/113
W1030	7030000010	S.RES MCR10EZJH JPW (000)	B	112.2/1.7
W1032	7030000010	S.RES MCR10EZJH JPW (000)	B	98.3/33.6
W1033	7030008240	S.RES ERJ12YJ0R00U	B	21.6/53.5
W1083	7030003860	S.RES ERJ3GE JPW V	B	104.3/41.2
W1084	7030003860	S.RES ERJ3GE JPW V	B	101.9/42
W1161	7030003860	S.RES ERJ3GE JPW V	T	36.1/23.8
W1164	7120000490	JMP ERD25T0	B	86.4/116.7
W1261	7030003860	S.RES ERJ3GE JPW V	B	73.1/127.1
W1330	8900011960	CBL OPC-1216	T	86.8/23.9
W1601	7030003860	S.RES ERJ3GE JPW V	B	86/7.3
W1670	7030003860	S.RES ERJ3GE JPW V	B	88/5
W1750	7030003860	S.RES ERJ3GE JPW V	B	88/5
W9001	9044901007	WIR 23/00/060/W01/W01	B	88/5
EP401	6910012350	S.BEA MMZ1608Y 102BT	B	16.5/70.2
EP403	6910012350	S.BEA MMZ1608Y 102BT	B	20.8/63
EP404	6910012350	S.BEA MMZ1608Y 102BT	T	14.4/60.4
EP405	6910012350	S.BEA MMZ1608Y 102BT	T	21.3/66.3
EP470	6910012350	S.BEA MMZ1608Y 102BT	T	16.4/68.2
EP482	6910012350	S.BEA MMZ1608Y 102BT	B	12.9/82.8
EP550	6910012350	S.BEA MMZ1608Y 102BT	B	24.6/39.8
EP551	6910012350	S.BEA MMZ1608Y 102BT	B	35.1/26.6
EP552	6910012350	S.BEA MMZ1608Y 102BT	B	27.1/48.7
EP553	6910012350	S.BEA MMZ1608Y 102BT	B	18/48.1
EP721	6910012350	S.BEA MMZ1608Y 102BT	B	32.1/85.5
EP1750	6910012350	S.BEA MMZ1608Y 102BT	B	27.8/124
EP1751	6910012350	S.BEA MMZ1608Y 102BT	B	27.8/125.5

[LOGIC-T UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC50	1140010090	S.IC µPD70F3102AGJ-33-8EU	T	61.6/60
IC51	1130007281	S.IC TC7S32FU (TE85R, F)	T	45.3/71.2
IC52	1110005730	S.IC S-80928CNMC-G8Y-T2	B	54.3/48.2
IC53	1130007111	S.IC TC7W04FU (TE12L, F)	T	44.6/68.1
IC54	1140008650	S.IC HN58X2464TI	T	45.2/62.4
IC55	1130010630	S.IC SN74AHC541PWR	B	43/42.3
IC56	1190001340	S.IC M62334FP 600C	T	59.8/43.1
IC57	1190001340	S.IC M62334FP 600C	T	68.2/43.2
IC58	1110002861	S.IC TA75S393F (TE85R, F)	B	4/54.1
IC100	1130010620	S.IC SN74AHC541PWR	B	109.6/55.6
IC101	1130007111	S.IC TC7W04FU (TE12L, F)	T	106.1/62.2
IC102	1130008711	S.IC TC7SET04FU (T5L, JF)	T	110.9/61.3
IC103	1130010630	S.IC SN74AHC541PWR	T	108.9/55.3
IC105	1130010580	S.IC µPD43256BGW-70LL-9JL	T	108.7/43.2
IC150	1110005430	S.IC CMX589AD5	T	98.2/17.4
IC151	1130008711	S.IC TC7SET04FU (T5L, JF)	T	89.1/22.9
IC152	1130004201	S.IC TC4S66F (TE85R, F)	B	103.9/13.5
IC153	1130004201	S.IC TC4S66F (TE85R, F)	B	100.9/19
IC200	1120002870	S.IC XCS20XL-4TQ144I	T	32.1/24.9
IC201	1130006891	S.IC TC7S04FU (TE85R, F)	B	36.5/60.2
IC202	1130008361	S.IC TC7SHU04FU (TE85L, JF)	T	25.6/38.9
IC203	1130008361	S.IC TC7SHU04FU (TE85L, JF)	B	35.4/37.1
IC300	1110005290	S.IC NJM2115V-TE1	T	58.6/25.4
IC301	1110005290	S.IC NJM2115V-TE1	T	57.2/36.5
IC302	1110005290	S.IC NJM2115V-TE1	T	68.4/26.7
IC350	1130006220	S.IC TC4W53FU (TE12L)	T	84.4/25.1
IC351	1110003780	S.IC NJM2902V-TE1-#ZZZB	T	90.6/29.1
IC352	1130006220	S.IC TC4W53FU (TE12L)	T	81.2/29.6
IC353	1130008561	S.IC TC7S51F (TE85L, F)	T	100.8/29.8
IC354	1130006220	S.IC TC4W53FU (TE12L)	T	104.8/24.8
IC355	1110002751	S.IC TA75S01F (TE85R, F)	B	87.5/23.5
IC500	1180001071	S.IC TA7805F (TE16L, Q)	T	86.3/79.9
IC502	1180002390	S.REG S-812C33AMC-C2N-T2	T	92.8/72
IC503	1110005440	S.IC NJM2374AM-TE1	T	110.5/76.6
IC504	1180002390	S.REG S-812C33AMC-C2N-T2	T	64.3/80.8
IC550	1130012051	S.IC FT232BL	T	11.8/67.4
IC551	1130009570	S.IC BR93LC46F-WE2	T	12.8/58.2
IC553	1130007281	S.IC TC7S32FU (TE85R, F)	B	10.4/55
IC901	1120002960	S.IC TC74AC541FT (EL)	T	33.1/5.4
IC902	1120002830	S.IC NJM2125F-TE1-#ZZZB	B	34.5/10.9
Q50	1530002280	S.TR 2SC4081 T106 S	B	8.3/49.6
Q51	1510000771	S.TR 2SA1586-GR (TE85R, F)	B	5.7/49.9
Q52	1590000430	S.TR DTC144EUA T106	B	7.9/53.6
Q100	1590000430	S.TR DTC144EUA T106	T	79/32.4
Q101	1590001980	S.TR XP4315 (TX)	B	42/13.9
Q102	1590001980	S.TR XP4315 (TX)	B	39.5/13.9
Q150	1590001400	S.TR XP1214 (TX)	T	91.3/18.8
Q151	1590001400	S.TR XP1214 (TX)	B	97.2/12.4
Q153	1590000430	S.TR DTC144EUA T106	B	76.3/30.3
Q154	1590000430	S.TR DTC144EUA T106	B	106.3/18.5
Q155	1590000430	S.TR DTC144EUA T106	B	74.5/26.6
Q156	1590000430	S.TR DTC144EUA T106	B	72/28.4
Q400	1590000430	S.TR DTC144EUA T106	B	73.3/20.4
Q500	1520000200	S.TR 2SB798-T2 DK	T	80.3/69.6
Q501	1590000430	S.TR DTC144EUA T106	T	76.6/72.1
Q502	1530002280	S.TR 2SC4081 T106 S	T	67.9/78.3
Q503	1520000200	S.TR 2SB798-T2 DK	B	74.3/74.5
Q504	1530002280	S.TR 2SC4081 T106 S	B	70/80.5
Q550	1590000430	S.TR DTC144EUA T106	B	15.5/55.9
D50	1790001240	S.DIO MA2S728-(TX)	T	59.3/72.6
D51	1750000550	S.DIO 1SS355 TE-17	B	1.4/54.1
D52	1750000550	S.DIO 1SS355 TE-17	B	50.1/66.5
D53	1750000550	S.DIO 1SS355 TE-17	T	46.6/65.5
D54	1750000550	S.DIO 1SS355 TE-17	B	48.1/72.7
D350	1720000361	S.DIO HSU88TRF-E	T	85.3/30.3
D351	1720000361	S.DIO HSU88TRF-E	T	87.7/25.4
D501	1790000671	S.DIO SB07-03C-TB-E	T	72.2/75.6
D502	1750000550	S.DIO 1SS355 TE-17	T	71.2/78.3
D503	1790000671	S.DIO SB07-03C-TB-E	T	99.4/71.9
D504	1790000671	S.DIO SB07-03C-TB-E	B	110.2/80.1
X50	6050011290	S.XTL CR-715 (6 MHz)	T	44.3/53.2
X200	6050011240	S.XTL CR-708 (16.384 MHz)	T	19/40.3
X201	6050011700	S.XTL CR-760 (9.8304 MHz)	T	37.2/39.3
X550	6050011290	S.XTL CR-715 (6 MHz)	T	3.4/61.5
L50	6200005741	S.COL ELJRE 47NG-F	T	65.2/73.6
L51	6200005741	S.COL ELJRE 47NG-F	T	48.4/52
L100	6200005741	S.COL ELJRE 47NG-F	B	111.3/62
L101	6200005741	S.COL ELJRE 47NG-F	B	111.3/63.3
L103	6200005741	S.COL ELJRE 47NG-F	B	108.5/33.6
L150	6200002040	S.COL NL 252018T-101J	T	99.7/23
L210	6200005741	S.COL ELJRE 47NG-F	T	70.6/73.4
L211	6200005741	S.COL ELJRE 47NG-F	B	47.7/59.7

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[LOGIC-T UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C430	4030007090	S.CER C1608 CH 1H 470J-T	T	79.4/22.8
C431	4030007090	S.CER C1608 CH 1H 470J-T	B	87.3/13.2
C432	4030007090	S.CER C1608 CH 1H 470J-T	B	80.6/23.6
C433	4030007090	S.CER C1608 CH 1H 470J-T	B	80.9/20.2
C434	4030007090	S.CER C1608 CH 1H 470J-T	B	80.3/12.5
C435	4030007090	S.CER C1608 CH 1H 470J-T	B	82.2/20.2
C437	4030007090	S.CER C1608 CH 1H 470J-T	B	84.7/18.4
C438	4030007090	S.CER C1608 CH 1H 470J-T	B	22/23.6
C442	4030011600	S.CER C1608 JB 1E 104K-T	T	80.7/23.6
C443	4030011810	S.CER C1608 JB 1A 224K-T	B	71.3/24.6
C500	4510008520	S.ELE EEE1CA470SP	B	84.4/69.5
C501	4030011600	S.CER C1608 JB 1E 104K-T	T	84.1/72.4
C502	4030011600	S.CER C1608 JB 1E 104K-T	T	86.5/73
C503	4510008520	S.ELE EEE1CA470SP	B	96.2/69.9
C504	4030006850	S.CER C1608 JB 1H 471K-T	T	86.5/71.7
C506	4030011600	S.CER C1608 JB 1E 104K-T	T	58.6/13.5
C509	4550006250	S.TAN TEESVA 1A 106M8R	T	85.3/70
C510	4030011600	S.CER C1608 JB 1E 104K-T	T	97.4/23.8
C511	4030011600	S.CER C1608 JB 1E 104K-T	T	90.5/70.2
C512	4550006250	S.TAN TEESVA 1A 106M8R	T	88.8/70.4
C513	4510007130	S.ELE EEEFCD J 470R	T	98.6/79.1
C514	4030006850	S.CER C1608 JB 1H 471K-T	T	109.3/81.9
C515	4510008850	S.ELE EEE1CA101P	B	109.5/69.3
C516	4510008490	S.ELE EEE1CS1000SR	B	64.2/82
C517	4030011600	S.CER C1608 JB 1E 104K-T	T	66.9/81.3
C518	4030011600	S.CER C1608 JB 1E 104K-T	T	64.5/78.5
C519	4550006250	S.TAN TEESVA 1A 106M8R	T	65.2/75.9
C520	4550006200	S.TAN ECST0JY106R	T	71.7/81.7
C521	4550006200	S.TAN ECST0JY106R	B	69.4/70.9
C522	4550006620	S.TAN ECST0JY226R	T	96.6/71.7
C550	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/69
C551	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/54
C553	4030011600	S.CER C1608 JB 1E 104K-T	B	15.4/59.9
C554	4030011600	S.CER C1608 JB 1E 104K-T	T	18.1/62.2
C556	4030008900	S.CER C1608 JB 1H 333K-T	B	18.7/70.1
C557	4550006200	S.TAN ECST0JY106R	T	13.5/75.1
C558	4030006900	S.CER C1608 JB 1H 103K-T	T	15.2/73.9
C559	4030007090	S.CER C1608 CH 1H 470J-T	T	84/61.1
C561	4030007090	S.CER C1608 CH 1H 470J-T	T	85.7/57.4
C578	4030007090	S.CER C1608 CH 1H 470J-T	B	12.3/55
C579	4030007090	S.CER C1608 CH 1H 470J-T	B	10.7/53
C901	4030011600	S.CER C1608 JB 1E 104K-T	B	31.4/11.9
J50	6510019271	S.CON 52365-0671	T	5.1/49.9
J100	6510023860	S.CNR S9B-ZR-SM3A-TF	B	18/83.2
J101	6510022820	S.CNR AXN430C530P	B	17.2/14.8
J300	6510018350	S.CNR S3B-ZR-SM3A-TF	T	13.9/18.4
J400	6510022710	S.CNR 30FLZ-SM1-TB	T	78/13.7
J401	6510022710	S.CNR 30FLZ-SM1-TB	T	35/80.4
J901	6510021430	S.CNR S8B-ZR-SM3A-TF	T	13.2/3
W1	8900013180	CBL OPC-1312		

[MAIN-R UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC71	1110004470	S.IC μPC2721GV-E1	T	49.9/74.1
IC191	1110003491	S.IC TA31136FNG (D, EL)	T	46.5/29.9
IC341	1130008090	S.IC BU4066BCFV-E1	T	92.5/35.1
IC342	1130006220	S.IC TC4W53FU (TE12L)	T	106.9/33.8
IC343	1110005290	S.IC NJM2115V-TE1	T	98.2/28.2
IC400	1130010100	S.IC LMX2352TMX	B	25.6/64.8
IC550	1130007610	S.IC μPD3140GS-E1 (DS8)	B	12.7/35
IC551	1130006220	S.IC TC4W53FU (TE12L)	B	21/43.6
IC830	1110006090	S.IC XC6202P502PR	B	38.3/28.2
IC1330	1180002080	S.REG BA09FP-E2	B	75.3/89
IC1331	1180001071	S.IC TA7805F (TE16L, Q)	B	77/100.9
IC1332	1180002020	S.REG BA033FP-E2	B	36.4/96.1
Q1	1590002970	S.FET NE34018-T1 64	T	57.3/105.2
Q2	1530003660	S.TR 2SC5454-T1 R54	T	52.2/90.4
Q131	1580000680	S.FET 3SK241-R (TX)	T	41.9/58.9
Q191	1530002601	S.TR 2SC4215-O (TE85R, F)	T	45.4/35.3
Q192	1530002280	S.TR 2SC4081 T106 S	T	56.7/32.9
Q193	1530002280	S.TR 2SC4081 T106 S	T	59.4/35.7
Q400	1530003311	S.TR 2SC5107-O (TE85R, F)	T	23.2/52.5
Q470	1540000660	S.TR 2SD2216J-S	T	15.7/67.2
Q471	1530003560	S.TR 2SC5195-T1	T	25.6/73.3
Q472	1530003560	S.TR 2SC5195-T1	T	23.5/73.3
Q473	1530003311	S.TR 2SC5107-O (TE85R, F)	T	29.9/67.7
Q474	1530003311	S.TR 2SC5107-O (TE85R, F)	B	27.2/73.5
Q550	1530002280	S.TR 2SC4081 T106 S	T	25.3/48.6
Q631	1530003311	S.TR 2SC5107-O (TE85R, F)	T	23.7/32.8
Q632	1530003311	S.TR 2SC5107-O (TE85R, F)	T	29/30.2
Q633	1530003311	S.TR 2SC5107-O (TE85R, F)	B	26.3/29.8
Q634	1540000660	S.TR 2SD2216J-S	T	30.3/35
Q710	1530003311	S.TR 2SC5107-O (TE85R, F)	B	38.6/73.3
Q771	1530003311	S.TR 2SC5107-O (TE85R, F)	T	26.6/39.7
Q1330	1590001320	S.TR DTC143ZUA T106	B	63.8/108.7
Q1331	1510000890	S.TR DTA143TU T106	B	63.8/105.3
Q1332	1530003910	S.TR 2SC4684 (TE16L1 NQ)	B	63.4/98.6
Q1333	1520000730	S.TR 2SB934P (DS) -(TX)	B	76.3/75.5
Q1334	1530002280	S.TR 2SC4081 T106 S	B	63.1/74.7
Q1335	1590000430	S.TR DTC144EUA T106	B	62.8/71.6
Q1336	1540000440	S.TR 2SD1619-TTD	B	26.6/95.1
Q1337	1510000581	S.TR 2SA1362-GR (TE85R, F)	B	37.1/89.5
Q1338	1590000430	S.TR DTC144EUA T106	T	27.5/95.2
Q1340	1590000430	S.TR DTC144EUA T106	T	25.9/95.2
Q1341	1590000430	S.TR DTC144EUA T106	T	35.4/96.8
Q1342	1510000581	S.TR 2SA1362-GR (TE85R, F)	B	40.7/87.4
Q1343	1510000581	S.TR 2SA1362-GR (TE85R, F)	B	42.9/93.8
Q1344	1590000430	S.TR DTC144EUA T106	T	44.6/89.2
Q1345	1590000430	S.TR DTC144EUA T106	B	63.4/57.8
Q1346	1590000430	S.TR DTC144EUA T106	B	63.5/51.9
Q1347	1590000430	S.TR DTC144EUA T106	B	66.1/53.7
Q1348	1510000581	S.TR 2SA1362-GR (TE85R, F)	B	55.2/55.7
Q1349	1510000581	S.TR 2SA1362-GR (TE85R, F)	B	60.9/55.4
Q1352	1590000430	S.TR DTC144EUA T106	T	48.2/89.1
Q1800	1590000720	S.TR DTA144EUA T106	T	10.6/24.8
D131	1790001621	S.DIO 1SV308 (TPL3, F)	T	39.3/52.9
D192	1750000361	S.DIO 1SS364 (TE85L, F)	B	49.5/25.5
D193	1750000361	S.DIO 1SS364 (TE85L, F)	B	56.9/14.7
D194	1750000550	S.DIO 1SS355 TE-17	T	55.3/39.4
D195	1790001561	S.DIO 1SS372 (TE85R, F)	T	63.3/33.2
D470	1730002300	S.ZEN MA8082-M (TX)	T	15.1/71.6
D471	1720000471	S.VCP 1SV239 (TPH3, F)	T	20.8/76.9
D630	1720000690	S.VCP 1SV282 (TPH2)	T	13.8/41.3
D632	1790001260	S.DIO MA2S077-(TX)	T	13.6/35.9
D633	1730002300	S.ZEN MA8082-M (TX)	T	35.3/38.7
D711	1790001621	S.DIO 1SV308 (TPL3, F)	B	41.5/69.5
D771	1750000581	S.DIO 1SV307 (TPH3, F)	B	29/44.3
D1330	1790000700	DIO DSA3A1	T	39/127
D1331	1750000550	S.DIO 1SS355 TE-17	B	68.1/70.7
D1332	1750000550	S.DIO 1SS355 TE-17	T	27.3/92
D1333	1750000550	S.DIO 1SS355 TE-17	T	29.1/92
D1602	1730002280	S.ZEN MA8091-M (TX)	B	105.3/9.7
D1605	1730002280	S.ZEN MA8091-M (TX)	B	111.7/14.4
D1606	1730002280	S.ZEN MA8091-M (TX)	B	99.7/10.6
D1800	1750000550	S.DIO 1SS355 TE-17	T	13.7/23.9
D1801	1750000550	S.DIO 1SS355 TE-17	T	8.6/22.3
FI1	2040001660	S.FIL LFB431G28SN1A362	T	51.3/100.6
FI2	2040001660	S.FIL LFB431G28SN1A362	T	53.2/83
FI71	2040001650	S.SAW WF447B-T	T	50.2/66.2
FI191	2010002440	S.XTL FL-312 (31.05 MHz)	T	45.6/43.1
FI193	2020001460	CER CFWLA450KHFA-B0	T	64.1/16.3
X191	6070000190	S.DCR CDBC450KCA24-R0	T	57.5/28.1
X400	6050010930	S.XTL CR-662 (15.3 MHz)	T	14.3/55.1

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[MAIN-R UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
J1801	6510021720	S.CNR 30FLT-SM1-TB	T	87/5.8
W296	7030003860	S.RES ERJ3GE JPW V	T	71/38.3
W340	7030003860	S.RES ERJ3GE JPW V	B	67.1/9.8
W550	7030003860	S.RES ERJ3GE JPW V	B	26/42.3
W896	7030000010	S.RES MCR10EZHZ JPW (000)	B	44.8/85.8
W1022	7030003860	S.RES ERJ3GE JPW V	T	33.3/53.5
W1025	7030003860	S.RES ERJ3GE JPW V	B	94.4/3.3
W1026	7030003860	S.RES ERJ3GE JPW V	T	18.1/26
W1029	7030008240	S.RES ERJ12YJ0R00U	B	68.9/113
W1030	7030000010	S.RES MCR10EZHZ JPW (000)	B	112.2/1.7
W1032	7030000010	S.RES MCR10EZHZ JPW (000)	B	98.3/33.6
W1033	7030008240	S.RES ERJ12YJ0R00U	B	21.6/53.5
W1161	7030003860	S.RES ERJ3GE JPW V	T	36.1/23.8
W1330	8900011960	CBL OPC-1216		
W1601	7030003860	S.RES ERJ3GE JPW V	T	86.8/23.9
W1670	7030003860	S.RES ERJ3GE JPW V	B	86/7.3
W1750	7030003860	S.RES ERJ3GE JPW V	B	88/5
EP5	6910000630	BEA FSRH070140RN000B		
EP6	6910000630	BEA FSRH070140RN000B		
EP401	6910012350	S.BEA MMZ1608Y 102BT	B	16.5/70.2
EP402	6910012350	S.BEA MMZ1608Y 102BT	T	23/58
EP403	6910012350	S.BEA MMZ1608Y 102BT	T	23/59
EP470	6910012350	S.BEA MMZ1608Y 102BT	T	17.6/67.8
EP550	6910012350	S.BEA MMZ1608Y 102BT	B	24.9/39.8
EP551	6910012350	S.BEA MMZ1608Y 102BT	B	35.1/26.6
EP552	6910012350	S.BEA MMZ1608Y 102BT	B	27.1/48.7

[LOGIC-R UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC50	1140010090	S.IC μPD70F3102AGJ-33-8EU	T	61.6/60
IC51	1130007281	S.IC TC7S32FU (TE85R, F)	T	45.3/71.2
IC52	1110005730	S.IC S-80928CNMC-G8Y-T2	B	54.3/48.2
IC53	1130007111	S.IC TC7W04FU (TE12L, F)	T	44.6/68.1
IC54	1140008650	S.IC HN58X2464T1	T	45.2/62.4
IC55	1130010630	S.IC SN74AHCT541PWR	B	43/42.3
IC56	1190001340	S.IC M62334FP 600C	T	59.8/43.1
IC57	1190001340	S.IC M62334FP 600C	T	68.2/43.2
IC58	1110002861	S.IC TA75S393F (TE85R, F)	B	4/54.1
IC100	1130010620	S.IC SN74AHC541PWR	B	109.6/55.6
IC101	1130007111	S.IC TC7W04FU (TE12L, F)	T	106.1/62.2
IC102	1130008711	S.IC TC7SET04FU (T5L, JF)	T	110.9/61.3
IC103	1130010630	S.IC SN74AHCT541PWR	T	108.9/55.3
IC105	1130010580	S.IC μPD43256BGW-70LL-9JL	T	108.7/43.2
IC150	1110005430	S.IC CMX589AD5	T	98.2/17.4
IC151	1130008711	S.IC TC7SET04FU (T5L, JF)	T	89.1/22.9
IC152	1130004201	S.IC TC4S66F (TE85R, F)	B	103.9/13.5
IC153	1130004201	S.IC TC4S66F (TE85R, F)	B	100.9/19
IC200	1120002870	S.IC XCS20XL-4TQ144I	T	57.2/24.9
IC201	1130006891	S.IC TC7S04FU (TE85R, F)	B	36.5/60.2
IC202	1130008361	S.IC TC7SHU04FU (TE85L, JF)	T	25.6/38.9
IC203	1130008361	S.IC TC7SHU04FU (TE85L, JF)	B	35.4/37.1
IC300	1110005290	S.IC NJM2115V-TE1	T	58.6/25.4
IC301	1110005290	S.IC NJM2115V-TE1	T	57.2/36.5
IC302	1110005290	S.IC NJM2115V-TE1	T	68.4/26.7
IC350	1130006220	S.IC TC4W53FU (TE12L)	T	84.4/25.1
IC351	1110003780	S.IC NJM2902V-TE1-#ZZZB	T	90.6/29.1
IC352	1130006220	S.IC TC4W53FU (TE12L)	T	81.2/29.6
IC353	1130008561	S.IC TC75S51F (TE85L, F)	T	100.8/29.8
IC354	1130006220	S.IC TC4W53FU (TE12L)	T	104.8/24.8
IC355	1110002751	S.IC TA75S01F (TE85R, F)	B	87.5/23.5
IC500	1180001071	S.IC TA7805F (TE16L, Q)	T	86.3/79.9
IC502	1180002390	S.REG S-812C33AMC-C2N-T2	T	92.8/72
IC503	1110005440	S.IC NJM2374AM-TE1	T	110.5/76.6
IC504	1180002390	S.REG S-812C33AMC-C2N-T2	T	64.3/80.8
IC550	1130012051	S.IC FT232BL	T	11.8/67.4
IC551	1130009570	S.IC BR93LC46F-WE2	T	12.8/58.2
IC553	1130007281	S.IC TC7S32FU (TE85R, F)	B	10.4/55
IC901	1120002960	S.IC TC74AC541FT (EL)	T	33.1/5.4
IC902	1120002830	S.IC NJM2125F-TE1-#ZZZB	B	34.5/10.9
Q50	1530002280	S.TR 2SC4081 T106 S	B	8.3/49.6
Q51	1510000771	S.TR 2SA1586-GR (TE85R, F)	B	5.7/49.9
Q52	1590000430	S.TR DTC144EUA T106	B	7.9/53.6
Q100	1590000430	S.TR DTC144EUA T106	T	79/32.4
Q101	1590001980	S.TR XP4315 (TX)	B	42/13.9
Q102	1590001980	S.TR XP4315 (TX)	B	39.5/13.9
Q150	1590001400	S.TR XP1214 (TX)	T	91.3/18.8
Q151	1590001400	S.TR XP1214 (TX)	B	97.2/12.4
Q153	1590000430	S.TR DTC144EUA T106	B	76.3/30.3
Q154	1590000430	S.TR DTC144EUA T106	B	106.3/18.5
Q155	1590000430	S.TR DTC144EUA T106	B	74.5/26.6
Q156	1590000430	S.TR DTC144EUA T106	B	72/28.4
Q400	1590000430	S.TR DTC144EUA T106	B	73.3/20.4
Q500	1520000200	S.TR 2SB798-T2 DK	T	80.3/69.6
Q501	1590000430	S.TR DTC144EUA T106	T	76.6/72.1
Q502	1530002280	S.TR 2SC4081 T106 S	T	67.9/78.3
Q503	1520000200	S.TR 2SB798-T2 DK	B	74.3/74.5
Q504	1530002280	S.TR 2SC4081 T106 S	B	70/80.5
Q550	1590000430	S.TR DTC144EUA T106	B	15.5/55.9
D50	1790001240	S.DIO MA2S728-(TX)	T	59.3/72.6
D51	1750000550	S.DIO 1SS355 TE-17	B	1.4/54.1
D52	1750000550	S.DIO 1SS355 TE-17	B	50.1/66.5
D53	1750000550	S.DIO 1SS355 TE-17	T	46.6/65.5
D54	1750000550	S.DIO 1SS355 TE-17	B	48.1/72.7
D350	1720000361	S.DIO HSU88TRF-E	T	85.3/30.3
D351	1720000361	S.DIO HSU88TRF-E	T	87.7/25.4
D501	1790000671	S.DIO SB07-03C-TB-E	T	72.2/75.6
D502	1750000550	S.DIO 1SS355 TE-17	T	71.2/78.3
D503	1790000671	S.DIO SB07-03C-TB-E	T	99.4/71.9
D504	1790000671	S.DIO SB07-03C-TB-E	B	110.2/80.1
X50	6050011290	S.XTL CR-715 (6 MHz)	T	44.3/53.2
X200	6050011240	S.XTL CR-708 (16.384 MHz)	T	19/40.3
X201	6050011700	S.XTL CR-760 (9.8304 MHz)	T	37.2/39.3
X550	6050011290	S.XTL CR-715 (6 MHz)	T	3.4/61.5
L50	6200005741	S.COL ELJRE 47NG-F	T	65.2/73.6
L51	6200005741	S.COL ELJRE 47NG-F	T	48.4/52
L100	6200005741	S.COL ELJRE 47NG-F	B	111.3/62
L101	6200005741	S.COL ELJRE 47NG-F	B	111.3/63.3
L103	6200005741	S.COL ELJRE 47NG-F	B	108.5/33.6
L150	6200002040	S.COL NL 252018T-101J	T	99.7/23
L210	6200005741	S.COL ELJRE 47NG-F	T	70.6/73.4
L211	6200005741	S.COL ELJRE 47NG-F	B	47.7/59.7

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

[LOGIC-R UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
C430	4030007090	S.CER C1608 CH 1H 470J-T	T	79.4/22.8
C431	4030007090	S.CER C1608 CH 1H 470J-T	B	87.3/13.2
C432	4030007090	S.CER C1608 CH 1H 470J-T	B	80.6/23.6
C433	4030007090	S.CER C1608 CH 1H 470J-T	B	80.9/20.2
C434	4030007090	S.CER C1608 CH 1H 470J-T	B	80.3/12.5
C435	4030007090	S.CER C1608 CH 1H 470J-T	B	82.2/20.2
C437	4030007090	S.CER C1608 CH 1H 470J-T	B	84.7/18.4
C438	4030007090	S.CER C1608 CH 1H 470J-T	B	22/23.6
C442	4030011600	S.CER C1608 JB 1E 104K-T	T	80.7/23.6
C443	4030011810	S.CER C1608 JB 1A 224K-T	B	71.3/24.6
C500	4510008520	S.ELE EEE1CA470SP	B	84.4/69.5
C501	4030011600	S.CER C1608 JB 1E 104K-T	T	84.1/72.4
C502	4030011600	S.CER C1608 JB 1E 104K-T	T	86.5/73
C503	4510008520	S.ELE EEE1CA470SP	B	96.2/69.9
C504	4030006850	S.CER C1608 JB 1H 471K-T	T	86.5/71.7
C506	4030011600	S.CER C1608 JB 1E 104K-T	T	58.6/13.5
C509	4550006250	S.TAN TEESVA 1A 106M8R	T	85.3/70
C510	4030011600	S.CER C1608 JB 1E 104K-T	T	97.4/23.8
C511	4030011600	S.CER C1608 JB 1E 104K-T	T	90.5/70.2
C512	4550006250	S.TAN TEESVA 1A 106M8R	T	88.8/70.4
C513	4510007130	S.ELE EEFCD QJ 470R	T	98.6/79.1
C514	4030006850	S.CER C1608 JB 1H 471K-T	T	109.3/81.9
C515	4510008850	S.ELE EEE1CA101P	B	109.5/69.3
C516	4510008490	S.ELE EEE1CS1000SR	B	64.2/82
C517	4030011600	S.CER C1608 JB 1E 104K-T	T	66.9/81.3
C518	4030011600	S.CER C1608 JB 1E 104K-T	T	64.5/78.5
C519	4550006250	S.TAN TEESVA 1A 106M8R	T	65.2/75.9
C520	4550006200	S.TAN ECST0JY106R	T	71.7/81.7
C521	4550006200	S.TAN ECST0JY106R	B	69.4/70.9
C522	4550006620	S.TAN ECST0JY226R	T	96.6/71.7
C550	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/69
C551	4030008560	S.CER C1608 CH 1H 300J-T	T	4.2/54
C553	4030011600	S.CER C1608 JB 1E 104K-T	B	15.4/59.9
C554	4030011600	S.CER C1608 JB 1E 104K-T	T	18.1/62.2
C556	4030008900	S.CER C1608 JB 1H 333K-T	B	18.7/70.1
C557	4550006200	S.TAN ECST0JY106R	T	13.5/75.1
C558	4030006900	S.CER C1608 JB 1H 103K-T	T	15.2/73.9
C559	4030007090	S.CER C1608 CH 1H 470J-T	T	84/61.1
C561	4030007090	S.CER C1608 CH 1H 470J-T	T	85.7/57.4
C578	4030007090	S.CER C1608 CH 1H 470J-T	B	12.3/55
C579	4030007090	S.CER C1608 CH 1H 470J-T	B	10.7/53
C901	4030011600	S.CER C1608 JB 1E 104K-T	B	31.4/11.9
J50	6510019271	S.CNR 52365-0671	T	5.1/49.9
J100	6510023860	S.CNR S9B-ZR-SM3A-TF	B	18/83.2
J101	6510022820	S.CNR AXN430C530P	B	17.2/14.8
J300	6510018350	S.CNR S3B-ZR-SM3A-TF	T	13.9/18.4
J400	6510022710	S.CNR 30FLZ-SM1-TB	T	78/13.7
J401	6510022710	S.CNR 30FLZ-SM1-TB	T	35/80.4
J901	6510021430	S.CNR S8B-ZR-SM3A-TF	T	13.2/3
W1	8900013161	CBL OPC-1313A		

[FRONT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
D1	1730002300	S.ZEN MA8082-M (TX)	T	7.5/21.8
D3	1790001711	S.DIO NNCD5.6C-T1-A	T	57.5/16.7
D4	1790001711	S.DIO NNCD5.6C-T1-A	T	53/16.7
D5	1790001711	S.DIO NNCD5.6C-T1-A	T	48.4/16.7
D6	1790001711	S.DIO NNCD5.6C-T1-A	T	43.9/16.7
D7	1790001711	S.DIO NNCD5.6C-T1-A	T	78/16.6
D8	1790001711	S.DIO NNCD5.6C-T1-A	T	73.5/16.6
D9	1790001711	S.DIO NNCD5.6C-T1-A	T	69/16.7
D10	1790001711	S.DIO NNCD5.6C-T1-A	T	64.5/16.6
R1	7030006250	S.RES ERJ12YJ271U (270 Ω)	T	8.5/30.5
R2	7030008180	S.RES ERJ12YJ331U (330 Ω)	T	8.5/7.8
R3	7030003860	S.RES ERJ3GE JPW V	T	60.5/16.5
R4	7030003860	S.RES ERJ3GE JPW V	T	56/16.5
R5	7030003860	S.RES ERJ3GE JPW V	T	51.5/16.5
R6	7030003860	S.RES ERJ3GE JPW V	T	46.9/16.5
R7	7030003860	S.RES ERJ3GE JPW V	T	81/16.5
R8	7030003860	S.RES ERJ3GE JPW V	T	76.5/16.5
R9	7030003860	S.RES ERJ3GE JPW V	T	72/16.5
R10	7030003860	S.RES ERJ3GE JPW V	T	67.5/16.5
C1	4030011600	S.CER C1608 JB 1E 104K-T	T	7.2/18.8
C2	4510008800	S.ELE EEE1EA100SR	T	9.4/25.7
C3	4030007050	S.CER C1608 CH 1H 220J-T	T	59/16.5
C4	4030007050	S.CER C1608 CH 1H 220J-T	T	54.5/16.5
C5	4030007050	S.CER C1608 CH 1H 220J-T	T	49.9/16.5
C6	4030007050	S.CER C1608 CH 1H 220J-T	T	45.4/16.5
C7	4030007050	S.CER C1608 CH 1H 220J-T	T	79.5/16.5
C8	4030007050	S.CER C1608 CH 1H 220J-T	T	75/16.5
C9	4030007050	S.CER C1608 CH 1H 220J-T	T	70.5/16.5
C10	4030007050	S.CER C1608 CH 1H 220J-T	T	66/16.5
C11	4030006850	S.CER C1608 JB 1H 471K-T	T	7.2/20.1
J1	6450002100	CNR CMS1410-010010		
J2	6450002100	CNR CMS1410-010010		
J3	6510020250	S.CNR B9B-PH-SM3-TB	T	22.4/39.5
J4	6510022310	S.CNR B5B-PH-SM3-TB	T	72.5/39.5
DS1	5040003070	LED MPG4371F		
S1	2220000630	SW MFS201N-16		

[REAR UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
D1	1790001711	S.DIO NNCD5.6C-T1-A	T	36.9/71.8
D2	1790001711	S.DIO NNCD5.6C-T1-A	T	32.9/71.8
D3	1790001711	S.DIO NNCD5.6C-T1-A	T	24.9/71.8
D4	1790001711	S.DIO NNCD5.6C-T1-A	T	20.9/71.8
D5	1790001711	S.DIO NNCD5.6C-T1-A	T	16.9/71.7
D6	1790001711	S.DIO NNCD5.6C-T1-A	T	12.9/71.8
D7	1790000700	DIO DSA3A1		
D8	1790001711	S.DIO NNCD5.6C-T1-A	T	28.9/71.8
R1	7030003300	S.RES ERJ3GEYJ 680 V (68 Ω)	T	36/76.4
R2	7030003300	S.RES ERJ3GEYJ 680 V (68 Ω)	T	32/76.4
R3	7030003300	S.RES ERJ3GEYJ 680 V (68 Ω)	T	24/76.4
R4	7030003320	S.RES ERJ3GEYJ 101 V (100 Ω)	T	20/76.4
R5	7030003320	S.RES ERJ3GEYJ 101 V (100 Ω)	T	16/76.4
R6	7030003300	S.RES ERJ3GEYJ 680 V (68 Ω)	T	12/76.4
R7	7030011030	S.RES ERJ1TYJ 270U (27 Ω)	T	35.3/21.3
R8	7030003340	S.RES ERJ3GEYJ 151 V (150 Ω)	T	28/76.4
C7	4510008800	S.ELE EEE1EA100SR	T	40.8/26.8
J1	6510018920	S.CNR B8B-PH-SM3-TB	T	23.9/43
J2	6510016170	CNR 52018-8835		
J3	6510023260	S.CNR B6B-PH-SM3-TB	T	25.9/58.5
J4	6510011590	CNR B2P-VH		
J5	6510011460	CNR B6P-VH		
J6	6510018960	S.CNR B2B-PH-SM3-TB	T	39.8/36.3

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)
S.=Surface mount

[CHASSIS-T UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
IC1160	1150002200	IC RA18H1213G1-22		
J1	6510004910	CNR NR-DS-E 01		
MF1	2710000590	FAN MF40D-12H-001		
W1	8900010890	CBL OPC-1115		
W2	8900010890	CBL OPC-1115		
EP1161	6910000970	BEA DL-2OP 2.6-3-1.2H		
EP1162	6910000970	BEA DL-2OP 2.6-3-1.2H		

[CHASSIS-R UNIT]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
J1	6510004910	CNR NR-DS-E 01		
W1	8900010890	CBL OPC-1115		
W2	8900010890	CBL OPC-1115		

[CASE]

REF NO.	ORDER NO.	DESCRIPTION	M.	H/V LOCATION
MF1	2710000750	FAN FBA08A12LZ		
W1	8900013140	CBL OPC-1323		
W2	8900013210	CBL OPC-1307		
W3	8900013240	CBL OPC-1373		
W5	8900013170	CBL OPC-1306		
W6	8900013170	CBL OPC-1306		
EP1	6910008330	E.OTH G80-18		

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

SECTION 6

MECHANICAL PARTS AND DISASSEMBLY

[CASE]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900013140	Cable OPC-1323 (2731 POWER-SW CABLE)	1
W2	8900013210	Cable OPC-1307 (2731 DC CABLE)	1
W3	8900013240	Cable OPC-1373 (2731 FAN CABLE)	1
W5	8900013170	Cable OPC-1306 (2731 TRX-ANT CABLE)	1
W6	8900013170	Cable OPC-1306 (2731 TRX-ANT CABLE)	1
EP1	6910008330	Fan guard G80-18	1
MF1	2710000750	Fan FBA08A12LZ	1
MP1	8010019640	2732 chassis assembly (NC)	1
MP4	8110008170	2731 cover (NC)	1
MP5	8210020751	2732 panel-1 (NC)	1
MP6	8930062850	2731 M-plate (NC)	2
MP7	8930062850	2731 M-plate (NC)	2
MP8	8930062841	2731 fan holder-1 (NC)	2
MP9	8930063090	Handle BH-60S	1
MP10	8850002040	Washer Z-8S	4
MP12	8930048350	2146 lens	1
MP13	8950003170	Nylon clip SL-8N	1
MP14	8810006470	Setscrew (C) M4 × 12 SUS	4
MP15	8810003360	Setscrew (C) M3 × 6	4
MP16	8810003360	Setscrew (C) M3 × 6	4
MP17	8810003360	Setscrew (C) M3 × 6	4
MP18	8810003360	Setscrew (C) M3 × 6	4
MP20	8810003360	Setscrew (C) M3 × 6	1
MP21	8810002950	Screw BiH M3 × 6 SUS	12
MP23	8810002950	Screw BiH M3 × 6 SUS	1
MP24	8810010130	Setscrew (C) 3 × 35	4
MP25	8810003390	Setscrew (C) M4 × 8	4
MP26	8810003390	Setscrew (C) M4 × 8	4
MP27	8830000110	Nut M4	1
MP28	8850000140	Flat washer M4 NI BS	1
MP29	8850000130	Flat washer M3 (3 × 8 × 0.5) NI BS	1
MP30	8930065080	2732 sheet	1
MP31	8930050210	Double sided tape (V) 40 × 25	1
MP32	8930050210	Double sided tape (V) 40 × 25	1
MP34	8810002950	Screw BiH M3 × 6 SUS	2
MP35	8810002950	Screw BiH M3 × 6 SUS	2

[FRONT UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6450002100	Connector CMS1410-010010	1
J2	6450002100	Connector CMS1410-010010	1
S1	2220000630	Switch MFS201N-16	1
DS1	5040003070	LED MPG4371F	1

[REAR UNIT]

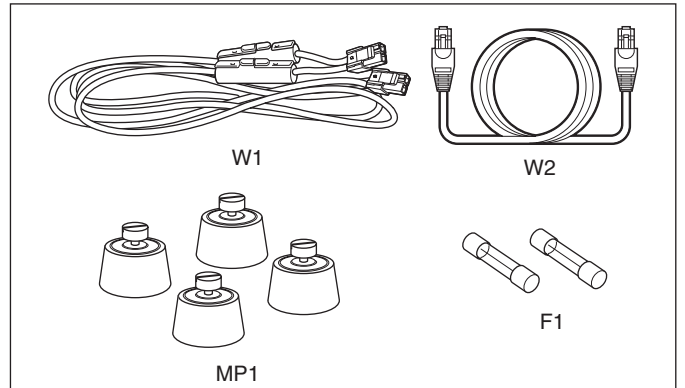
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J2	6510016170	Connector 52018-8835	1

Screw abbreviations

BiH: Binding head
 SUS: Stainless NI: Nickel
 BS: Brass

[ACCESSORIES]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
F1	5210000071	Fuse FGB 10A PBF	2
W1	8900013190	Cable OPC-1309 (2731 DC-IN CABLE)	1
W2	8900010550	Cable OPC-1069	1
MP1	8930057680	Rubber stand (O)	4



[CHASSIS-T PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510004910	Connector NR-DS-E 01	1
W1	8900010890	Cable OPC-1115	1
W2	8900010890	Cable OPC-1115	1
MF1	2710000590	Fan MF40D-12H-001	1
IC1160	1150002200	IC RA18H1213G1-22	1
EP1161	6910000970	Bead DL2-OP2.6-3-1.2H	1
EP1162	6910000970	Bead DL2-OP2.6-3-1.2H	1
MP1	8010019620	2506 chassis (A)-1	1
MP2	8810008660	Screw PH BT M3 × 8 NI-ZU	2
MP3	8810008660	Screw PH BT M3 × 8 NI-ZU	2
MP4	8810008660	Screw PH BT M3 × 8 NI-ZU	7
MP5	8110006640	2047 cover	1
MP6	8810008450	Screw BiH M4 × 8 ZK	1
MP9	8110005751	1729 fan cover-1	1
MP10	8810009110	Screw PH 0 M2.6 × 16 ZK	4
MP14	8510012210	2047 main shield	2
MP17	8810007130	Setscrew (H) M3 × 6	4
MP22	8930049650	Thermally sheet (H)	2
MP23	8930053472	Thermally sheet (R)-2 TC200HS (10 × 10)	3
MP24	8930055051	Thermally sheet (V)-1 TC400HS (10 × 15)	1
MP26	8510014251	2506 M-plate-1	1
MP27	8930059770	2633 M-holder	1
MP28	8930056781	2506 YGR plate-1	1
MP29	8510014241	2506 ANT plate-1	1
MP33	8930014140	Earth spring (D)	1
MP34	8930014140	Earth spring (D)	1
MP50	8930040010	Insulation plate EM	1

[MAIN-T UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1330	8900011960	Cable OPC-1216	1
MP1	8510016420	2506 VCO case	1
MP2	8510010880	1642 VCO case	1
MP3*	8510016430	2506 VCO cover	1
MP30	8930014140	Earth spring (D)	1
MP39	8930054521	Shield sponge (E)-1	1
MP54*	8510016440	2506 shield plate	1
MP55*	8510000210	194 shield plate	1
MP57*	8510010460	1691 main shield plate	1
MP58	8510011111	1922 VCO case-1	1
MP60	8510011101	1922 VCO cover-1	1
MP64	8930056580	Spacer with screw (AD)	4
MP65	8810007130	Setscrew (H) M3 × 6	4
MP66*	8510010460	1691 main shield plate	1
MP67	8510002280	VCO shield plate (A)	1
MP69*	8930053600	2242 spring	1
MP70	8930001170	Earth spring (A)	1

[LOGIC-T UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900013180	Cable OPC-1312 (2732 TX-CTRL CABLE)	1
MP1	8510012500	2176 shield plate	1
MP2	8510012500	2176 shield plate	1
MP3	8510014481	2506 CPU shield-1	1
MP6	8930001170	Earth spring (A)	1
MP7	8930007280	Aluminium sheet (H)	1
MP8	8510010460	1691 main shield plate	1
MP9	8510002280	VCO shield plate (A)	1
MP10	8510005070	599 shield plate	1

[CHASSIS-R PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510004910	Connector NR-DS-E 01	1
W1	8900010890	Cable OPC-1115	1
W2	8900010890	Cable OPC-1115	1
MP1	8010019620	2506 chassis (A)-1	1
MP2	8810008660	Screw PH BT M3 × 8 NI-ZU	2
MP4	8810008660	Screw PH BT M3 × 8 NI-ZU	7
MP5	8110006640	2047 cover	1
MP6	8810008450	Screw BiH M4 × 8 ZK	1
MP14	8510012210	2047 main shield	2
MP17	8810007130	Setscrew (H) M3 × 6	4
MP22	8930049650	Thermally sheet (H)	2
MP23	8930053472	Thermally sheet (R)-2 TC200HS (10 × 10)	2
MP28	8930056781	2506 YGR plate-1	1
MP29	8510014241	2506 ANT plate-1	1
MP33	8930014140	Earth spring (D)	1
MP34	8930014140	Earth spring (D)	1

[MAIN-R UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1330	8900011960	Cable OPC-1216	1
MP1	8510010880	1642 VCO case	1
MP2	8510010880	1642 VCO case	1
MP30	8930014140	Earth spring (D)	1
MP39	8930054521	Shield sponge (E)-1	1
MP40	8510002280	VCO shield plate (A)	1
MP54*	8510000210	194 shield plate	1
MP55*	8510000210	194 shield plate	1
MP57*	8510010460	1691 main shield plate	1
MP58	8510011111	1922 VCO case-1	1
MP60	8510011101	1922 VCO cover-1	1
MP64	8930056580	Spacer with screw (AD)	4
MP65	8810007130	Setscrew (H) M3 × 6	4
MP66*	8510010460	1691 main shield plate	1
MP67	8510002280	VCO shield plate (A)	1

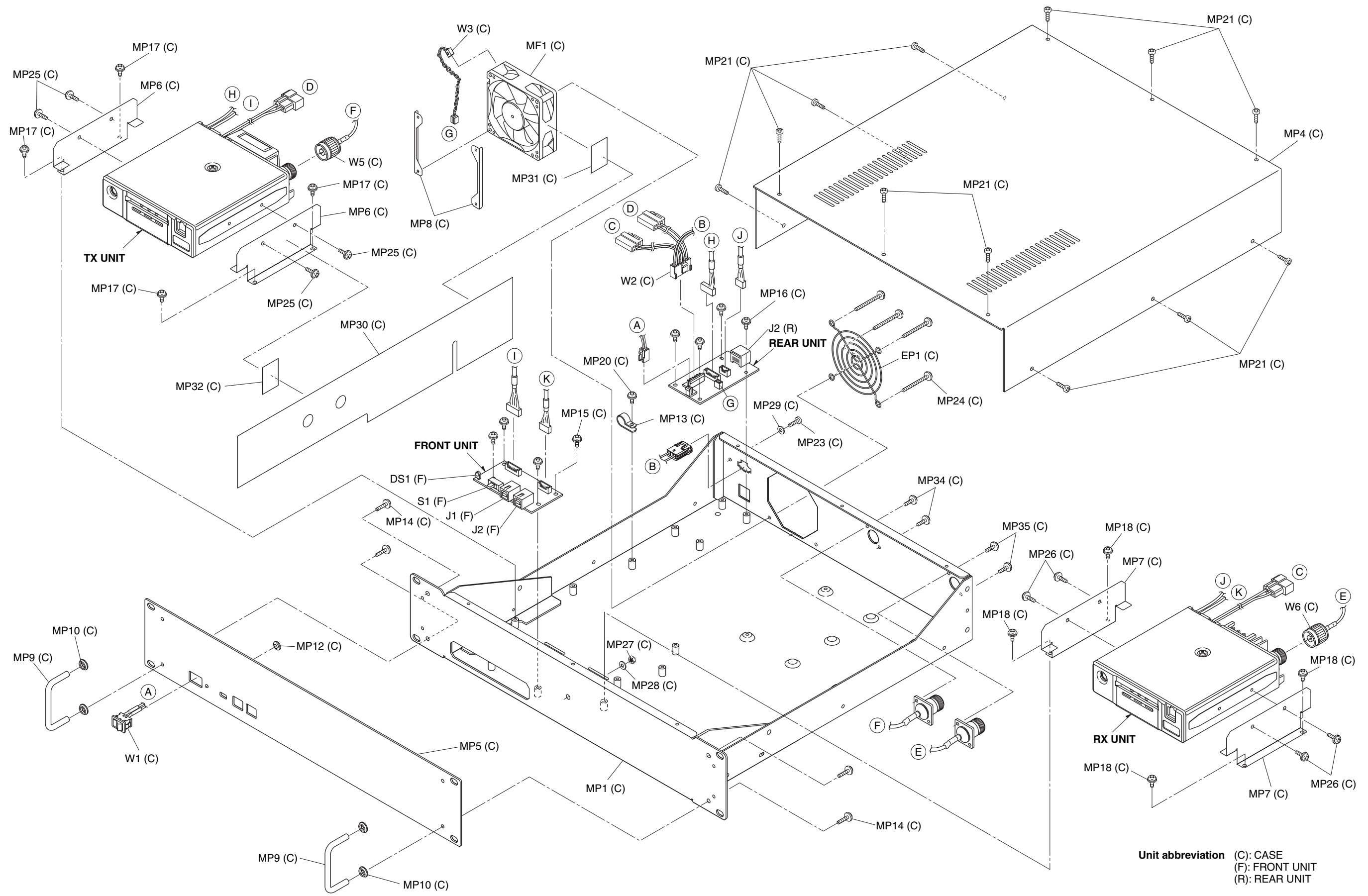
[LOGIC-R UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900013161	Cable OPC-1313A (2732 RX-CTRL CABLE)	1
MP1	8510012500	2176 shield plate	1
MP2	8510012500	2176 shield plate	1
MP3	8510014481	2506 CPU shield-1	1
MP6	8930001170	Earth spring (A)	1
MP7	8930007280	Aluminium sheet (H)	1
MP8	8510010460	1691 main shield plate	1
MP9	8510002280	VCO shield plate (A)	1
MP10	8510005070	599 shield plate	1

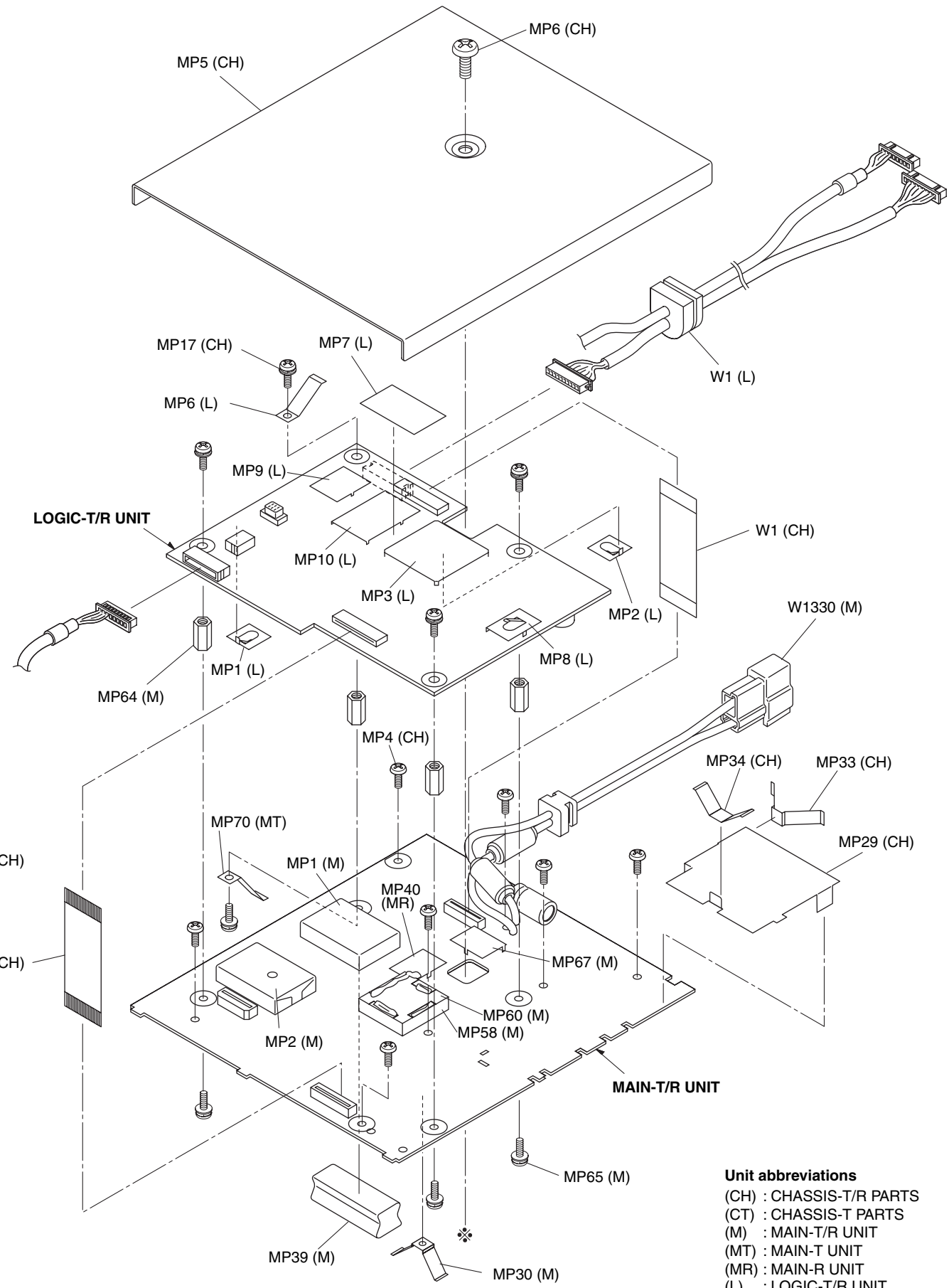
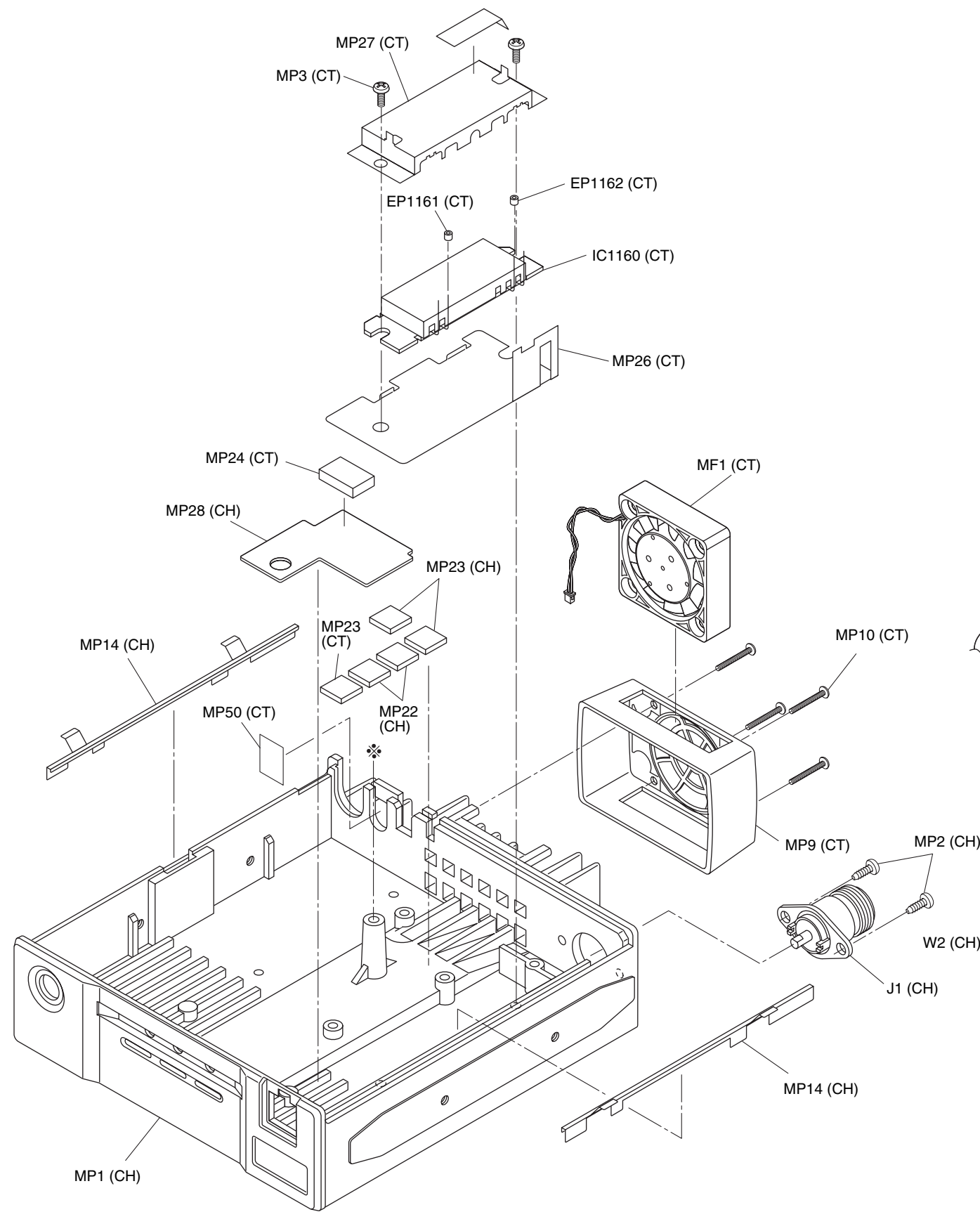
*Note: Refer to SECTION 9 BOARD LAYOUTS.

Screw abbreviations

BT: Self-tapping PH: Pan head
 BiH: Binding head
 ZK: Black
 NI-ZU: Nickel-Zinc



Unit abbreviation (C): CASE
(F): FRONT UNIT
(R): REAR UNIT

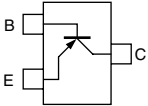
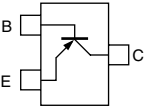
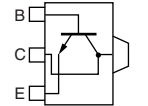
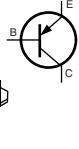
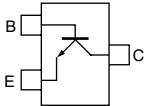
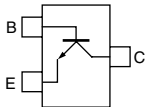
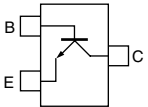
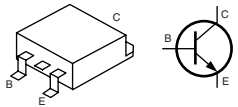
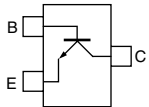
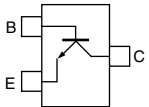
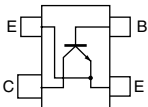
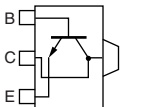
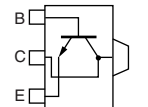
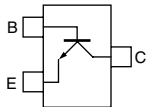
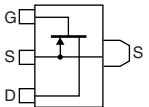
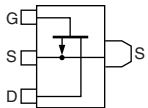
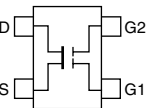
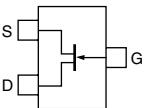
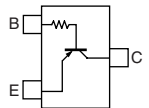
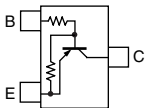
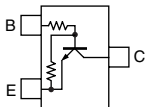
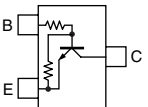
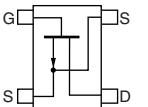
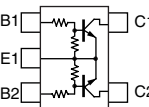
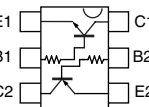


Unit abbreviations
 (CH) : CHASSIS-T/R PARTS
 (CT) : CHASSIS-T PARTS
 (M) : MAIN-T/R UNIT
 (MT) : MAIN-T UNIT
 (MR) : MAIN-R UNIT
 (L) : LOGIC-T/R UNIT


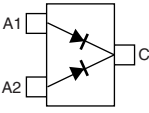
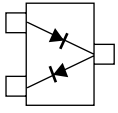
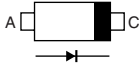
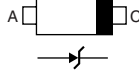

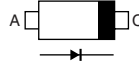
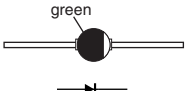

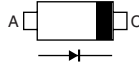

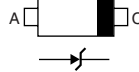

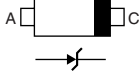
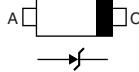

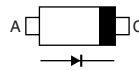
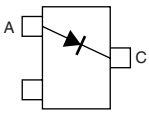
SECTION 7

SEMI-CONDUCTOR INFORMATION

• TRANSISTORS AND FET'S

<p>2SA1362 GR (Symbol: AEG)</p> 	<p>2SA1586 GR (Symbol: SG)</p> 	<p>2SB798 T2 DK (Symbol: DK)</p> 	<p>2SB934 P (Symbol: None)</p> 	<p>2SC4081 T106 S (Symbol: BS)</p> 
<p>2SC4215 O (Symbol: QO)</p> 	<p>2SC4226 T1 R25 (Symbol: R25)</p> 	<p>2SC4684 (Symbol: 2SC4684)</p> 	<p>2SC5107 O (Symbol: MFO)</p> 	<p>2SC5195 (Symbol: 88)</p> 
<p>2SC5454 R54 (Symbol: R54)</p> 	<p>2SD1619 T TD (Symbol: DB)</p> 	<p>2SD1801 S TL (Symbol: CE)</p> 	<p>2SD2216J (Symbol: Y)</p> 	<p>2SK2854 (Symbol: UP)</p> 
<p>2SK2855 (Symbol: UT)</p> 	<p>3SK241 (Symbol: DU)</p> 	<p>DTA114EUA T106 (Symbol: 14)</p> 	<p>DTA143TUA (Symbol: 93)</p> 	<p>DTA144EUA T106 (Symbol: 16)</p> 
<p>DTC143ZUA (Symbol: 123)</p> 	<p>DTC144EUA T106 (Symbol: 26)</p> 	<p>NE34018-T1 64 (Symbol: V64)</p> 	<p>XP1214 (Symbol: 9H)</p> 	<p>XP4315 (Symbol: CB)</p> 

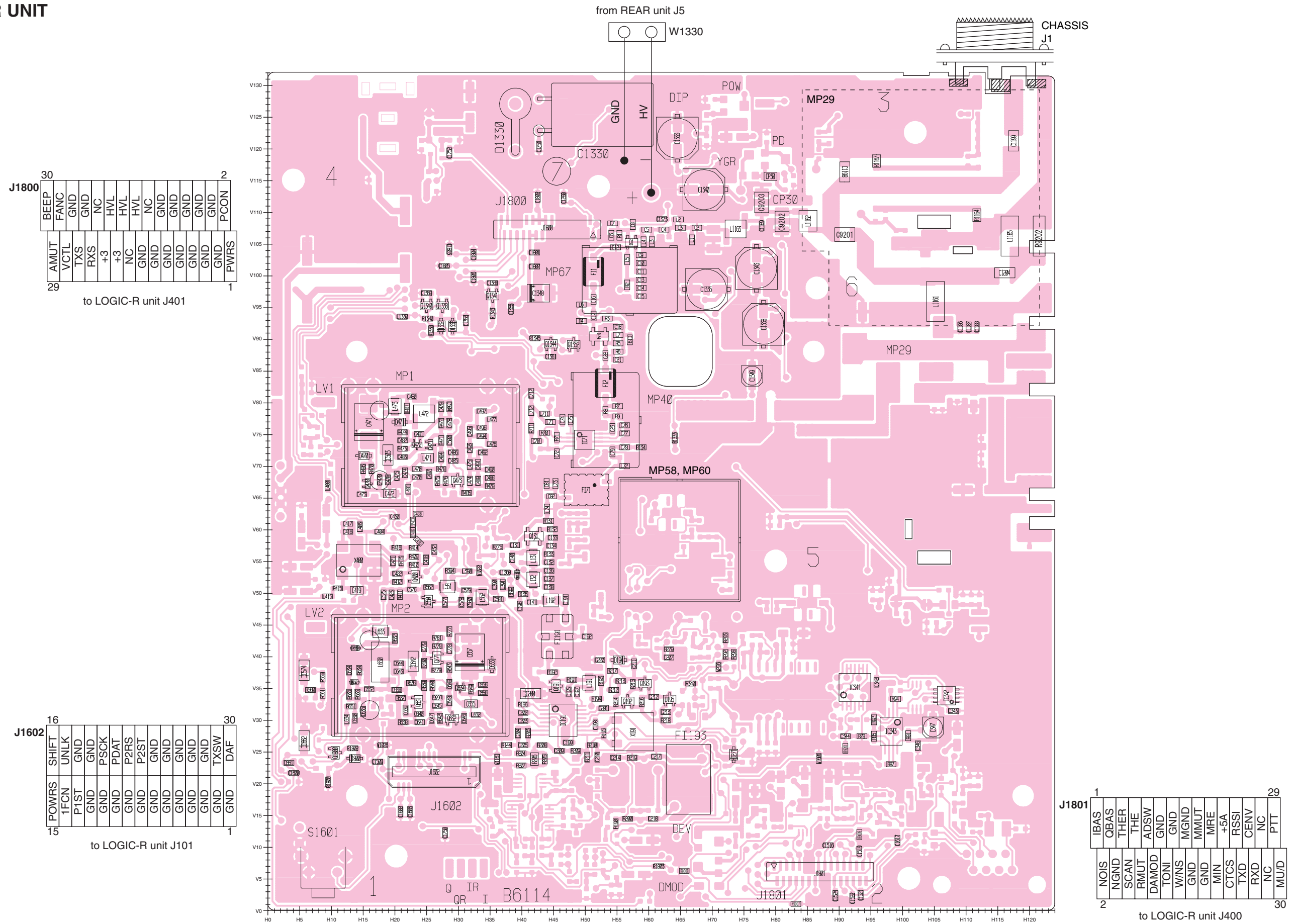
• DIODES

<p>1SS355 (Symbol: A)</p> 	<p>1SS364 (Symbol: BF)</p> 	<p>1SS372 (Symbol: N9)</p> 	<p>1SV239 (Symbol: TC)</p> 	<p>1SV282 (Symbol: TD)</p> 
<p>1SV307 (Symbol: TX)</p> 	<p>1SV308 (Symbol: TX)</p> 	<p>DSA3A1 (Color: Green)</p> 	<p>HSU88TRF (Symbol: 9)</p> 	<p>MA2S077 (Symbol: S)</p> 
<p>MA2S728 (Symbol: B)</p> 	<p>MA8030 H (Symbol: 3^0)</p> 	<p>MA8033 L (Symbol: 3_3)</p> 	<p>MA8062 M (Symbol: 6-2)</p> 	<p>MA8082 M (Symbol: 8-2)</p> 
<p>MA8091 M (Symbol: 9-1)</p> 	<p>NNCD5.6C-T1 (Symbol: NNCD5.6)</p> 	<p>SB07-03C (Symbol: J)</p> 		

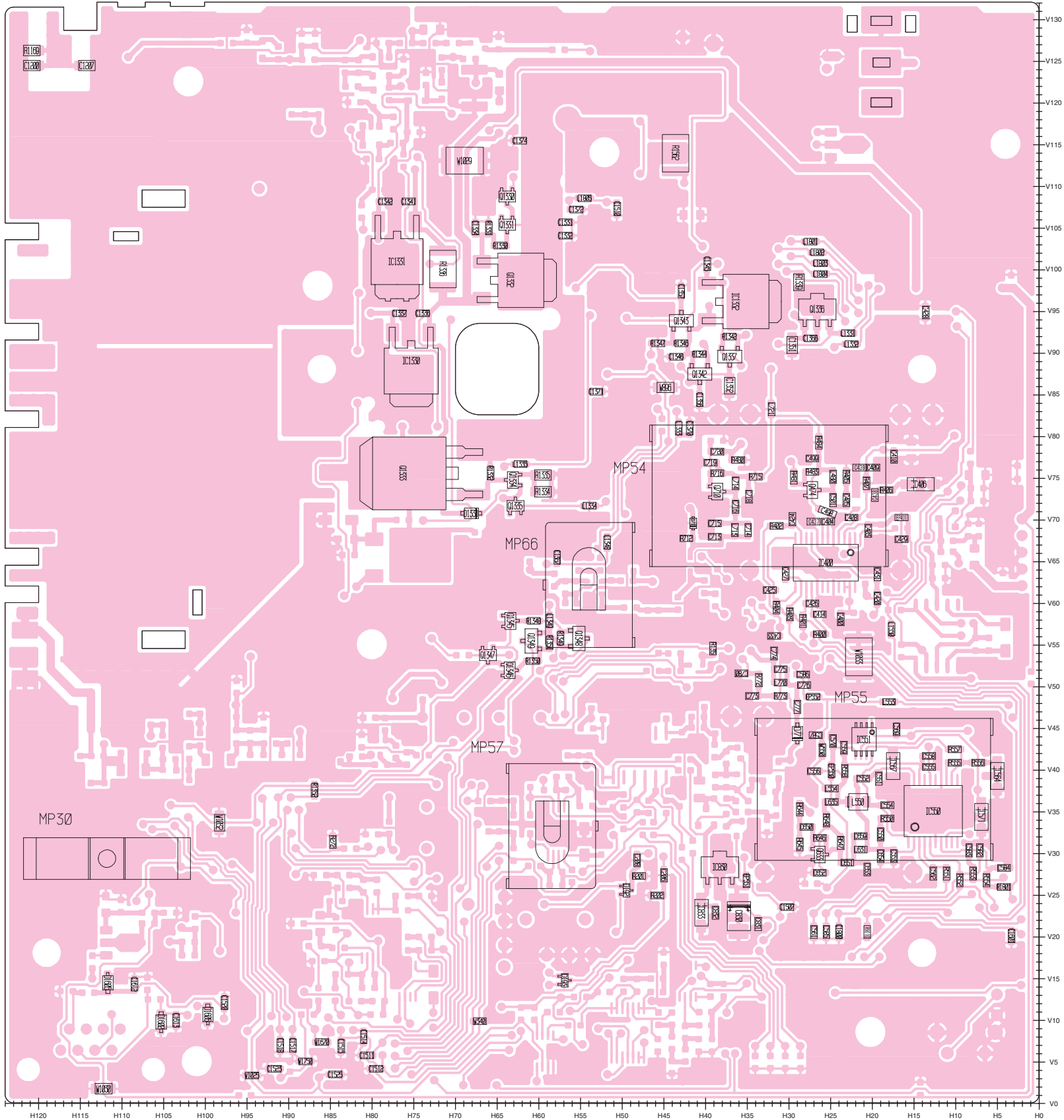
SECTION 8 BOARD LAYOUTS

8-1 MAIN-R UNIT

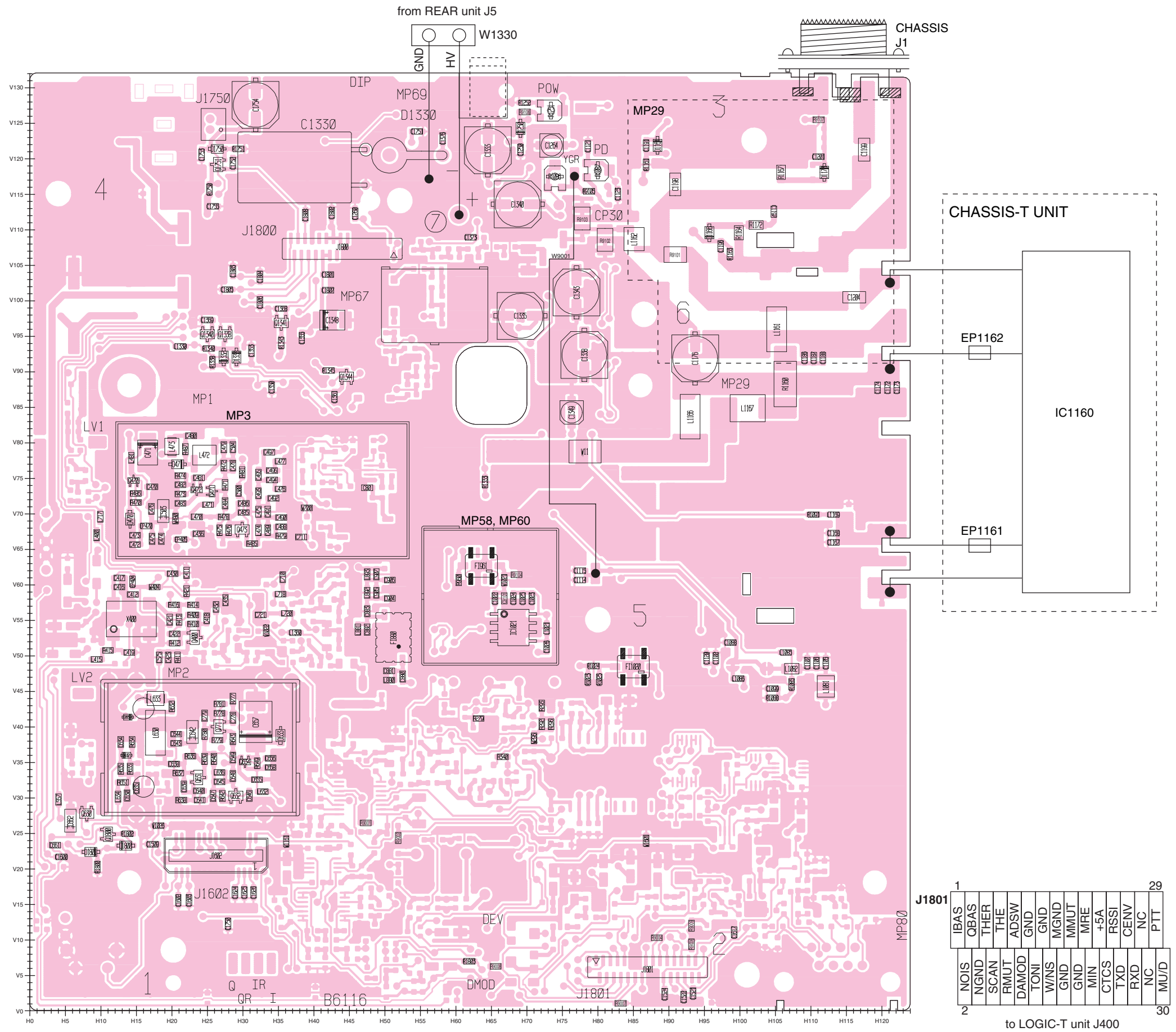
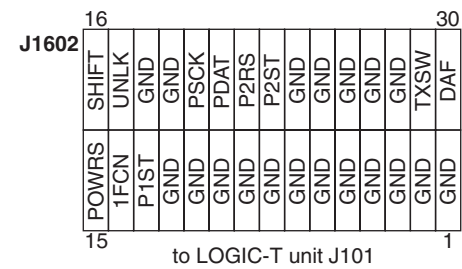
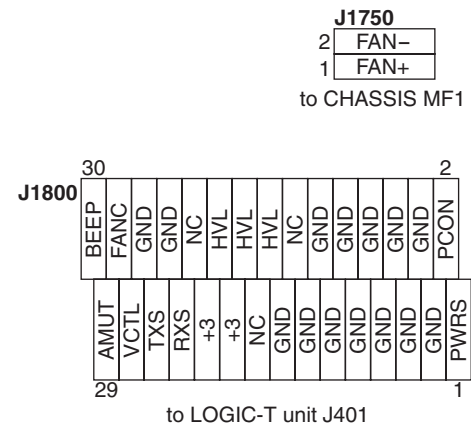
• TOP VIEW



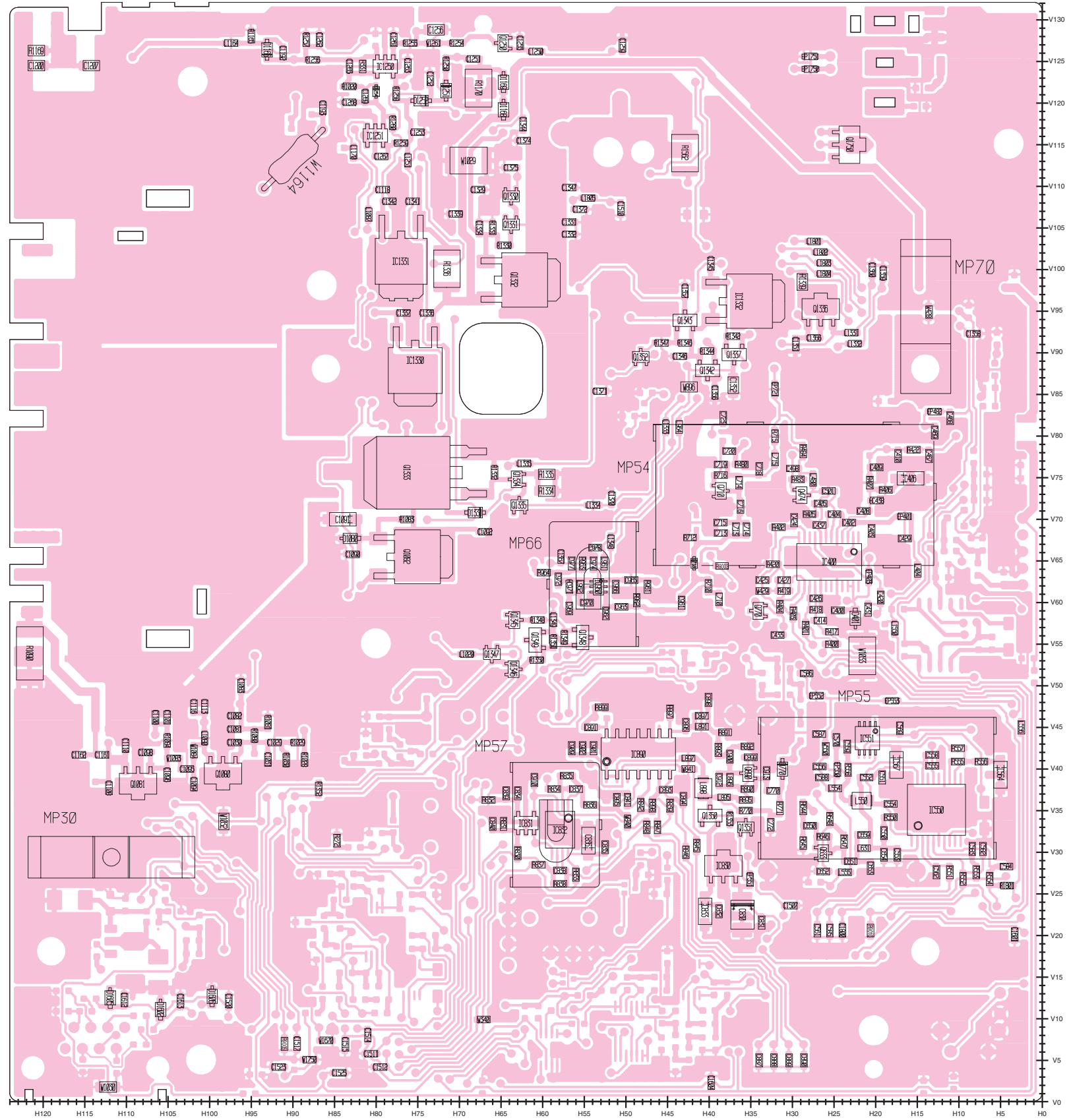
• BOTTOM VIEW (MAIN-R UNIT)



8-2 MAIN-T UNIT
• TOP VIEW

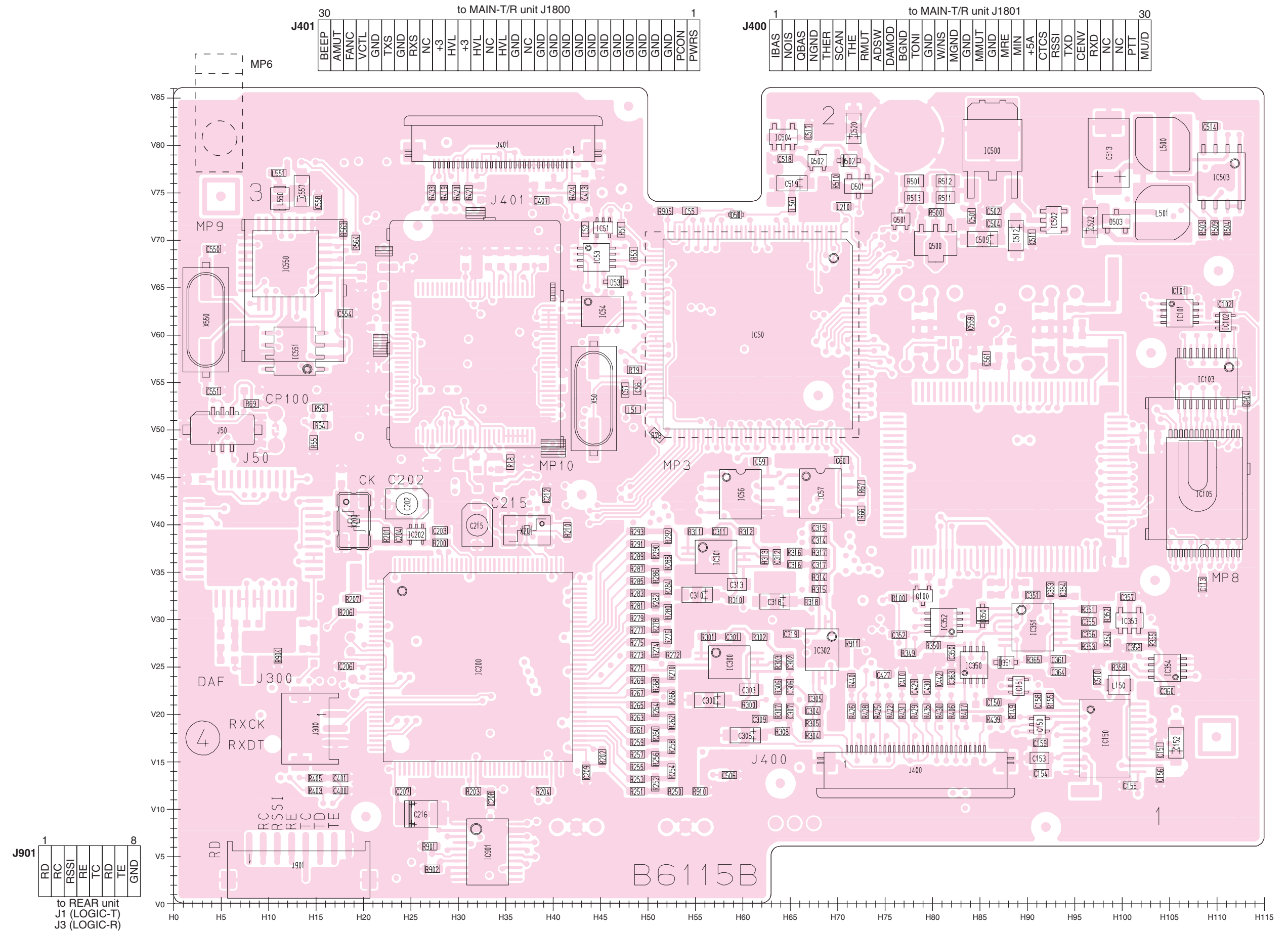


• BOTTOM VIEW (MAIN-T UNIT)

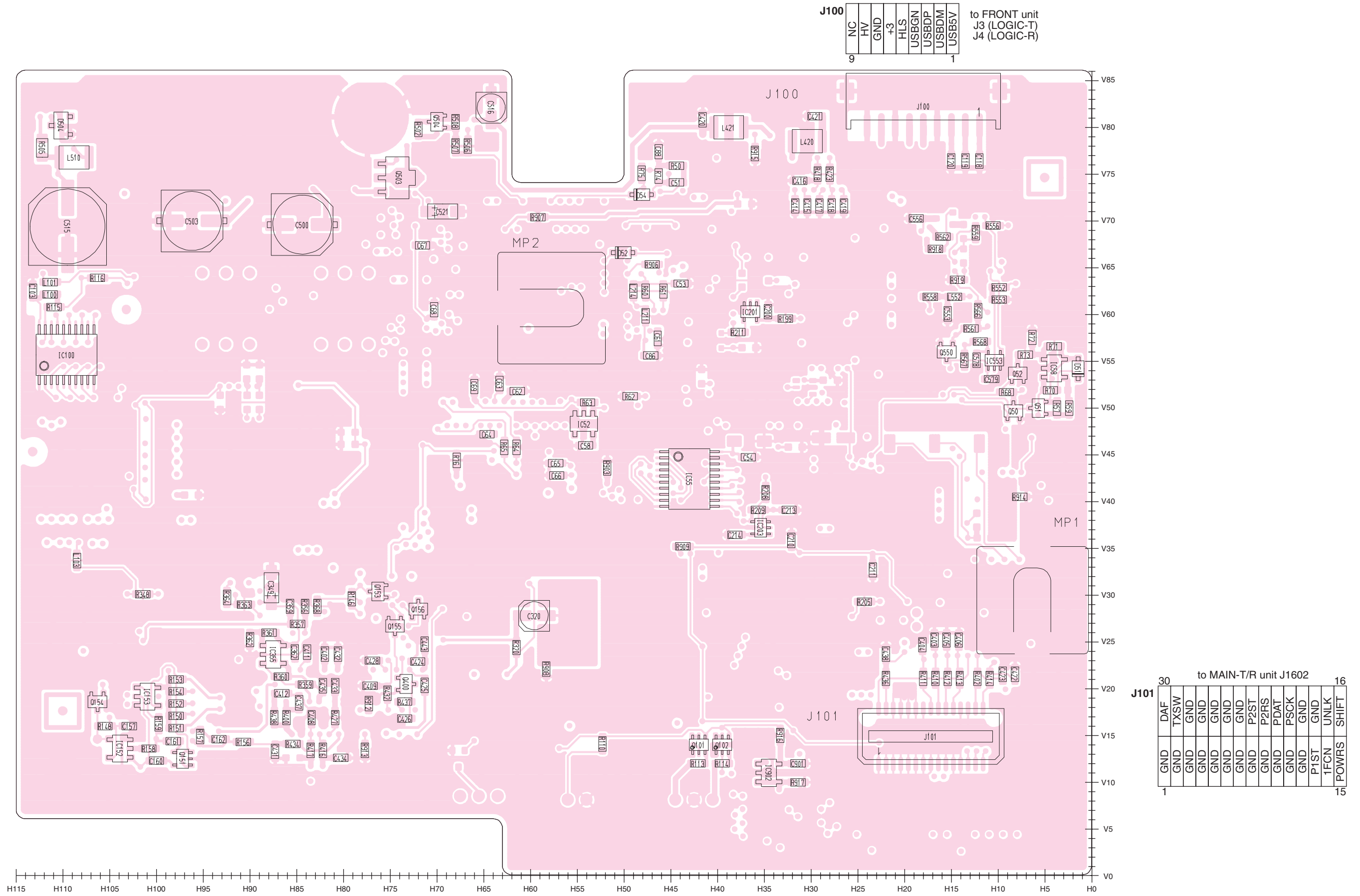


8-3 LOGIC-T/R UNIT

• TOP VIEW



• BOTTOM VIEW (LOGIC-T/R UNIT)



J100

NC	HV	GND	+3	HLS	USBGN	USBDP	USBDM	USB5V
9								1

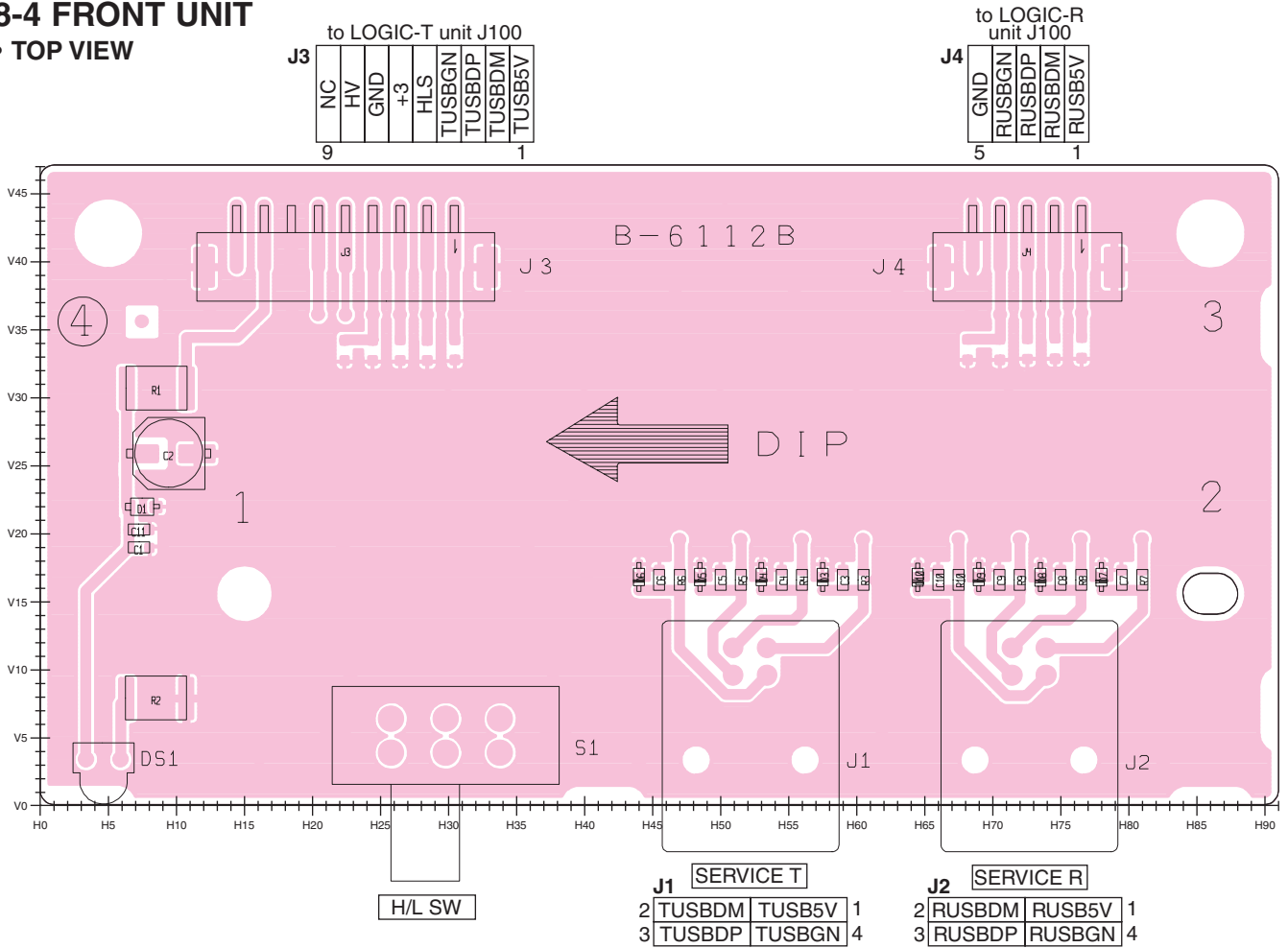
to FRONT unit
J3 (LOGIC-T)
J4 (LOGIC-R)

J101

30	to MAIN-T/R unit J1602														16				
	DAF	TXSW	GND	GND	GND	GND	GND	GND	P2ST	P2RS	PDAT	PCK	GND	GND	P1ST	1FCN	UNLK	SHIFT	
1	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND

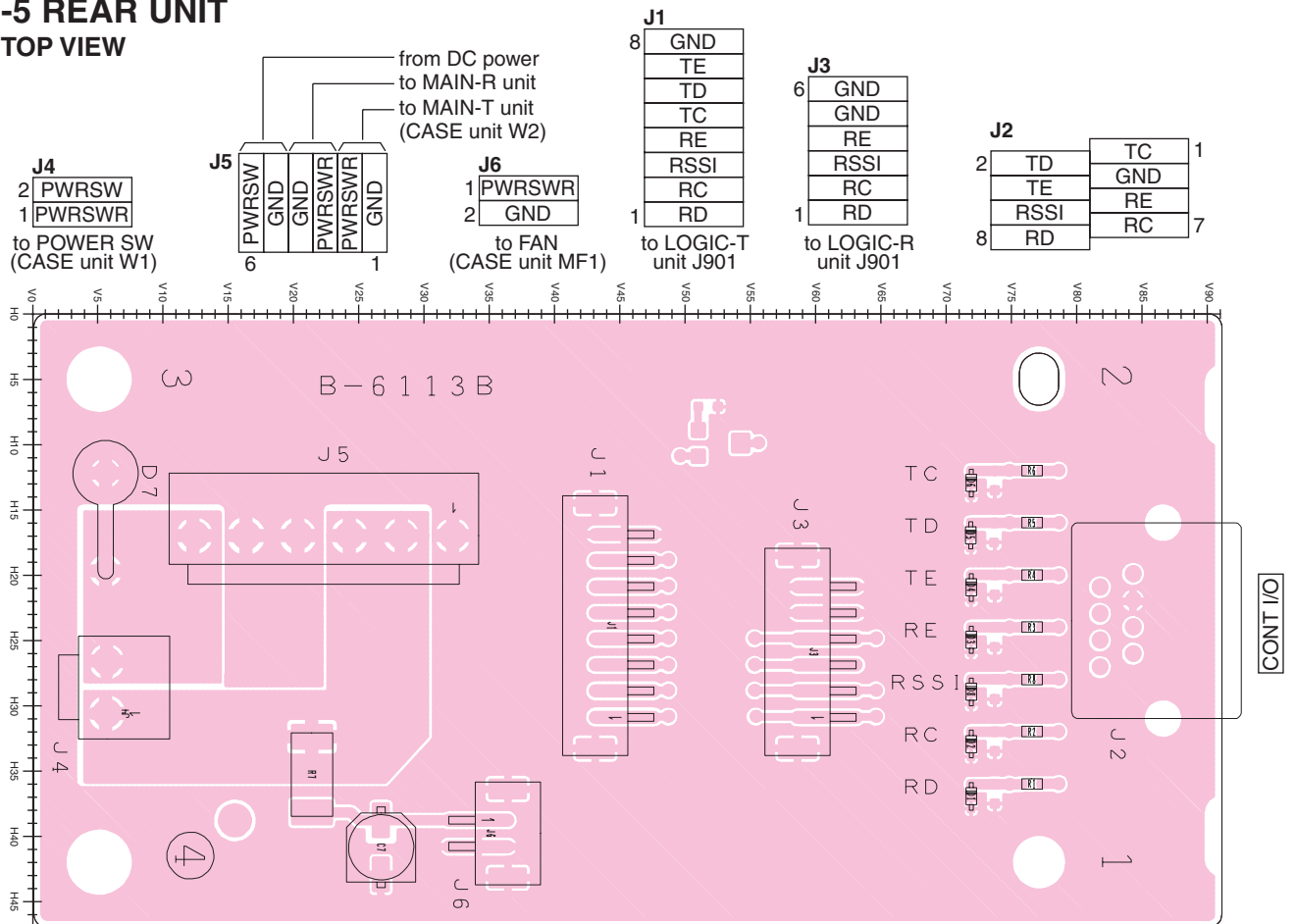
8-4 FRONT UNIT

• TOP VIEW

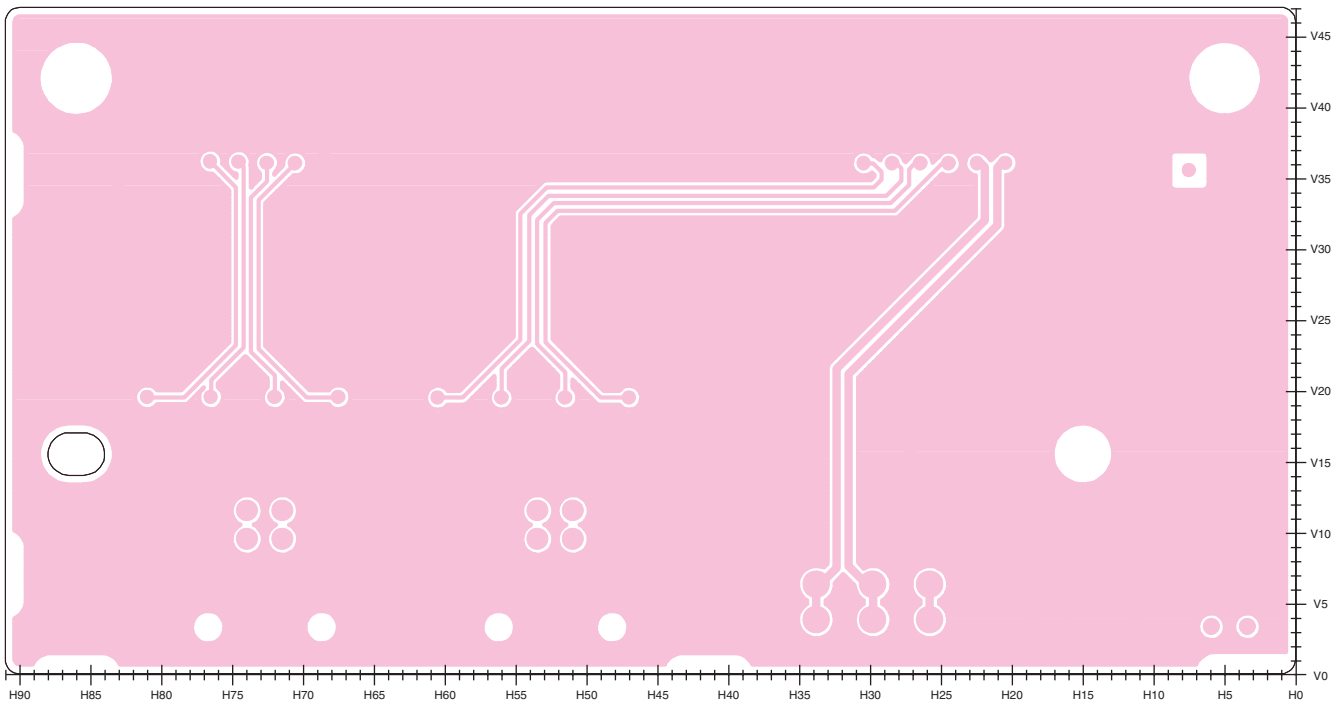


8-5 REAR UNIT

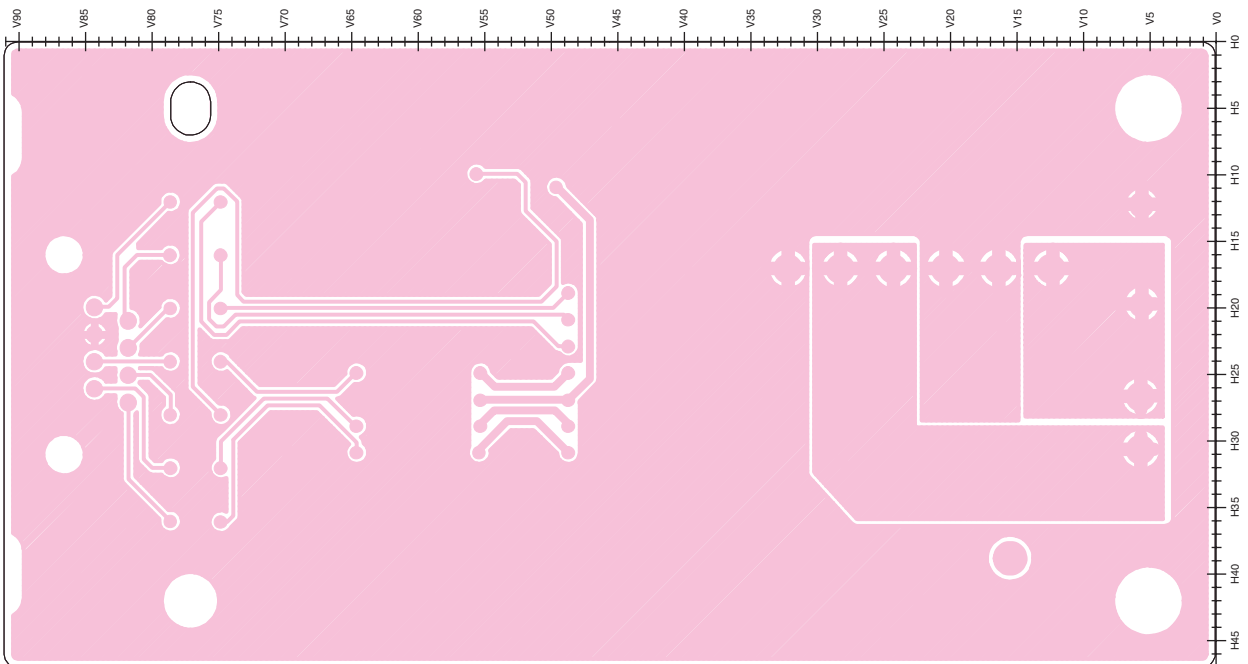
• TOP VIEW



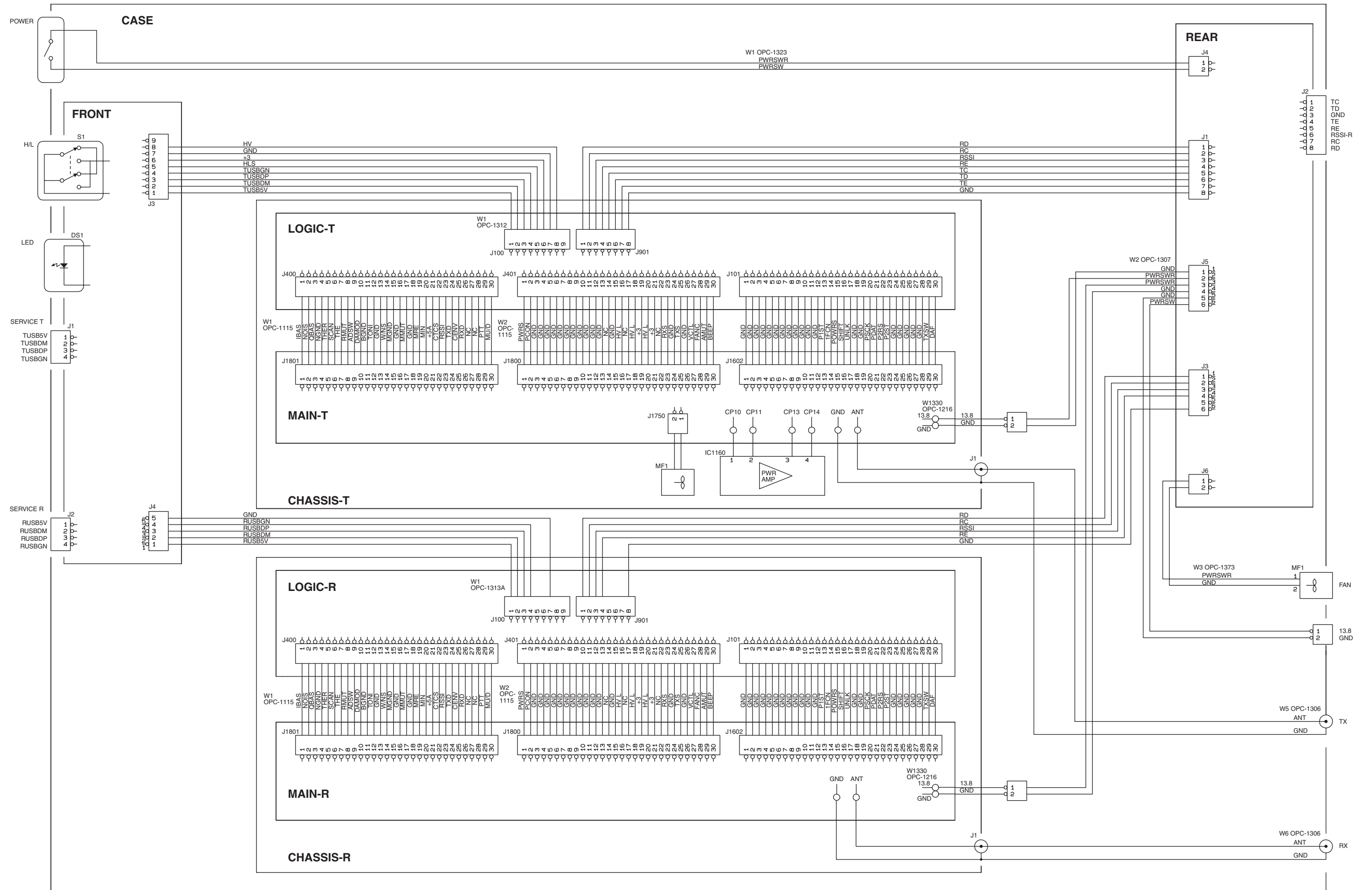
• **BOTTOM VIEW (FRONT UNIT)**



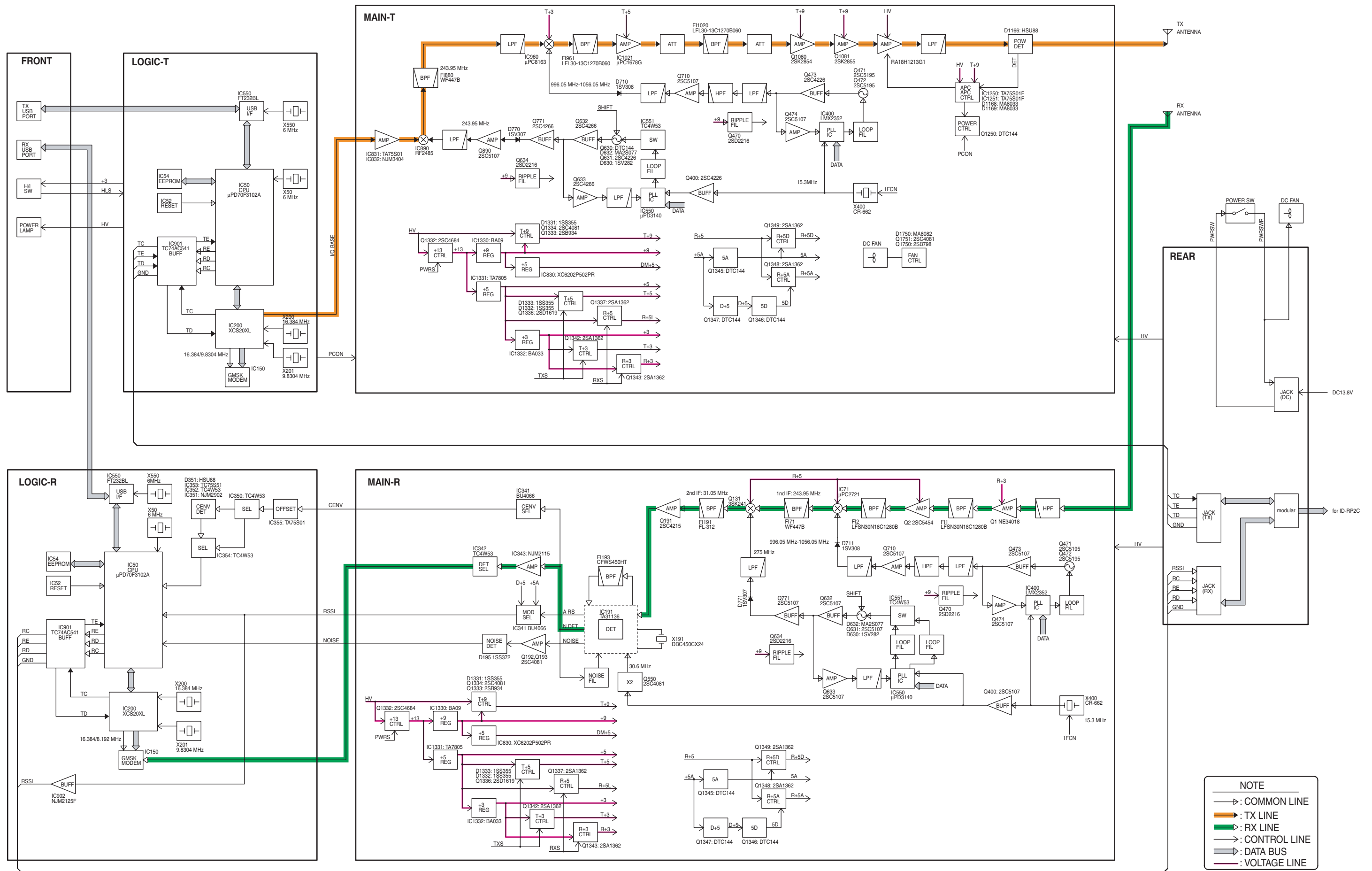
• **BOTTOM VIEW (REAR UNIT)**



SECTION 9 WIRING DIAGRAM

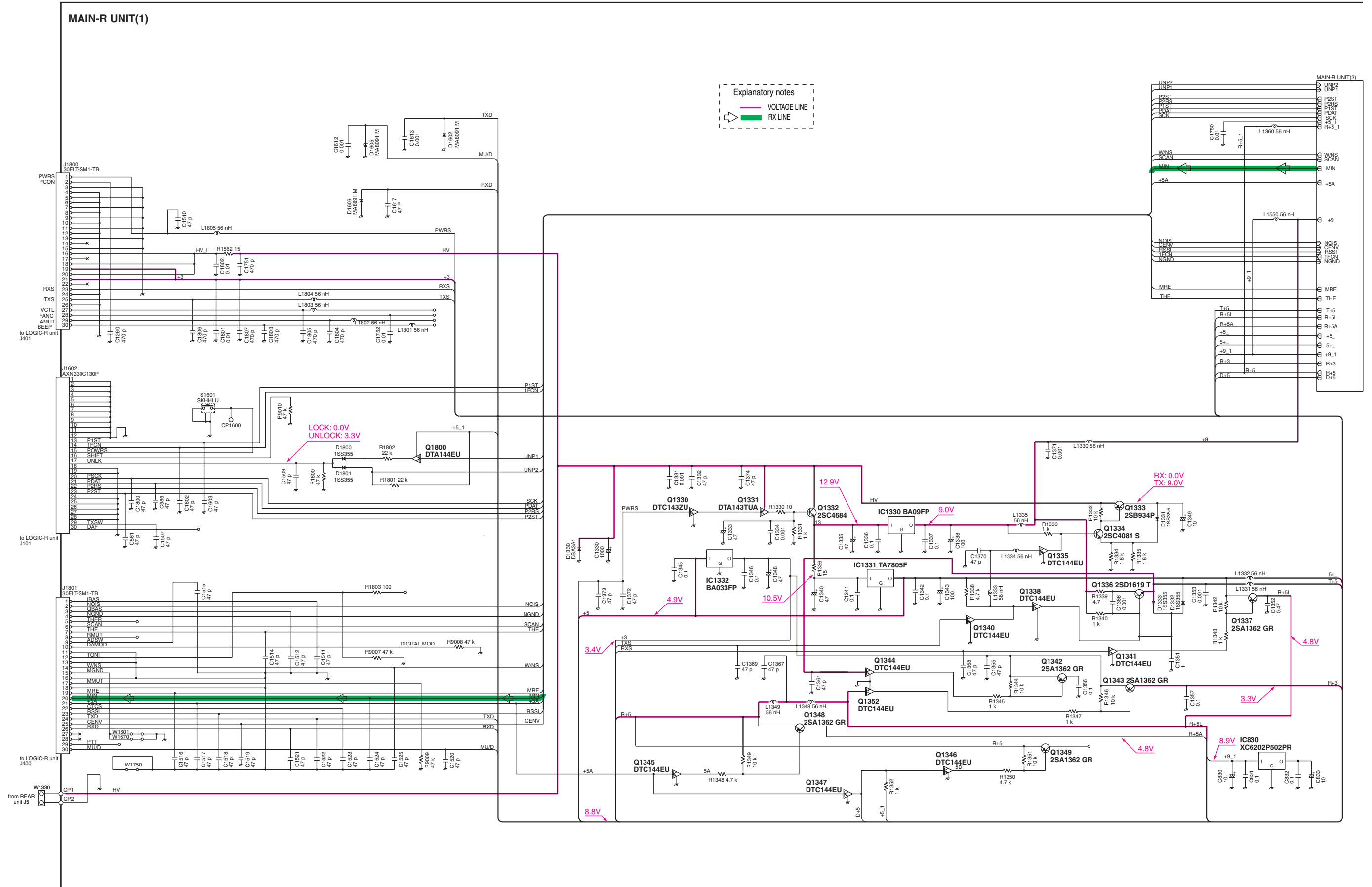


SECTION 10 BLOCK DIAGRAM

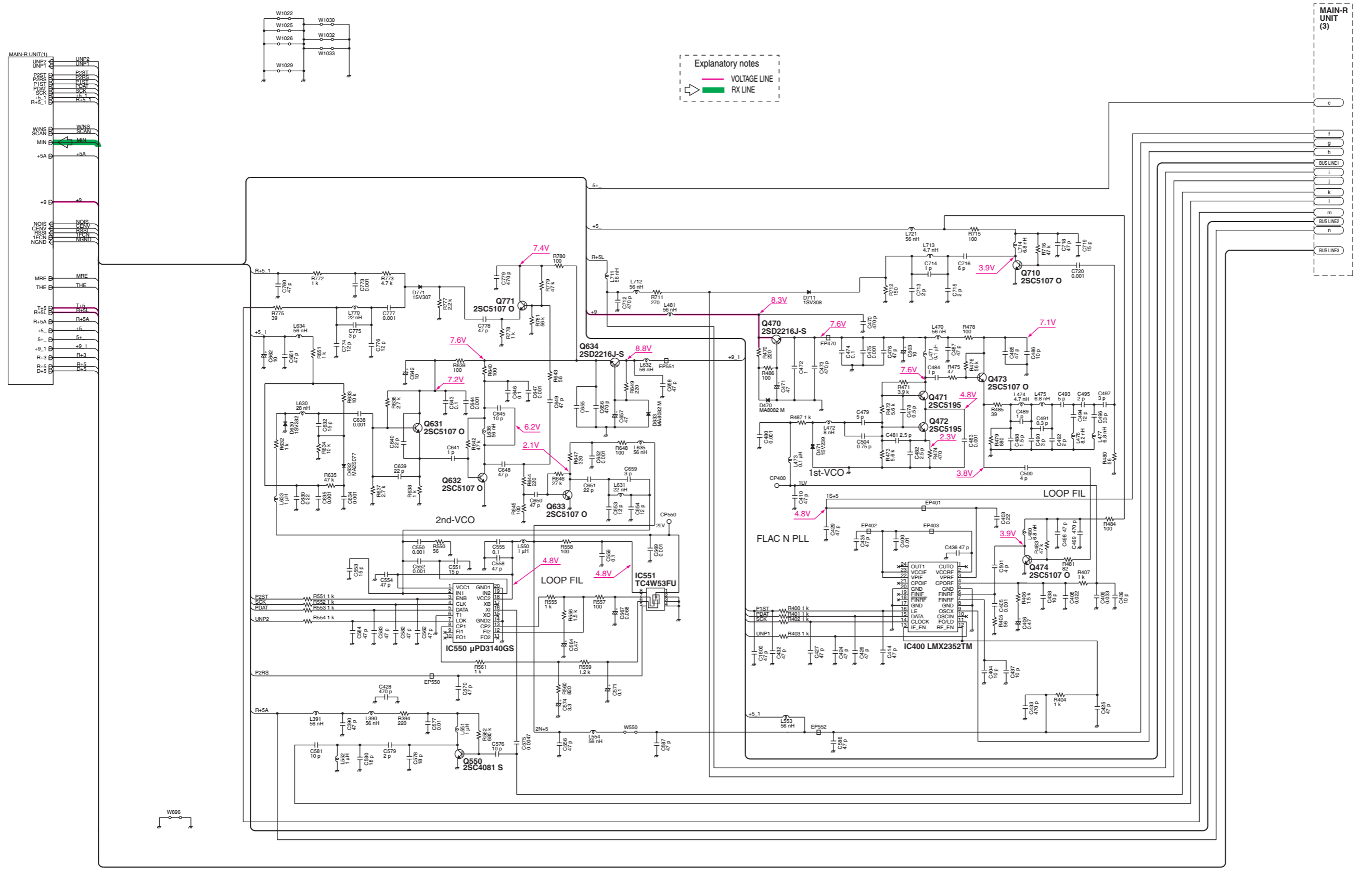


SECTION 11 VOLTAGE DIAGRAMS

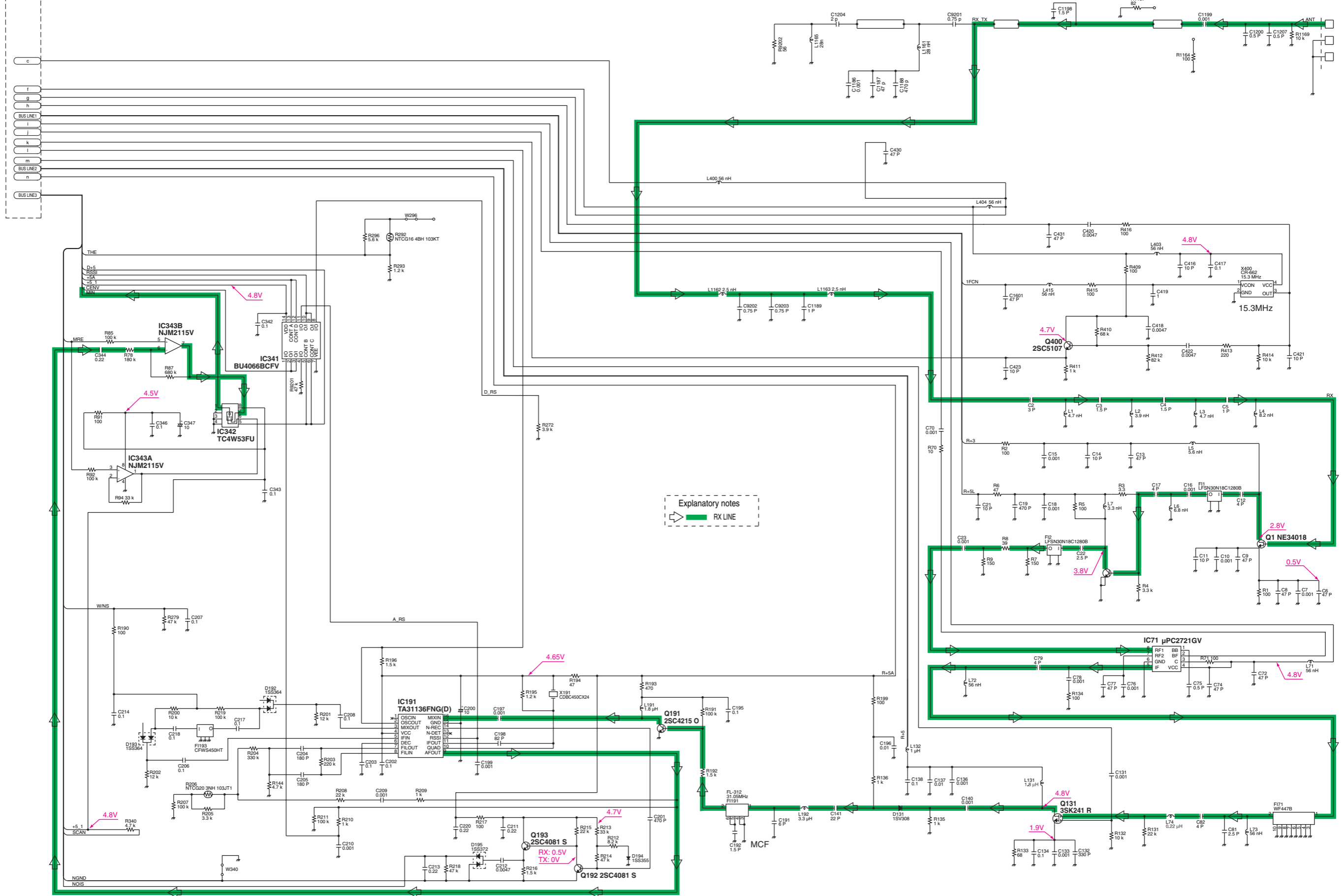
11-1 MAIN-R UNIT



MAIN-R UNIT(2)



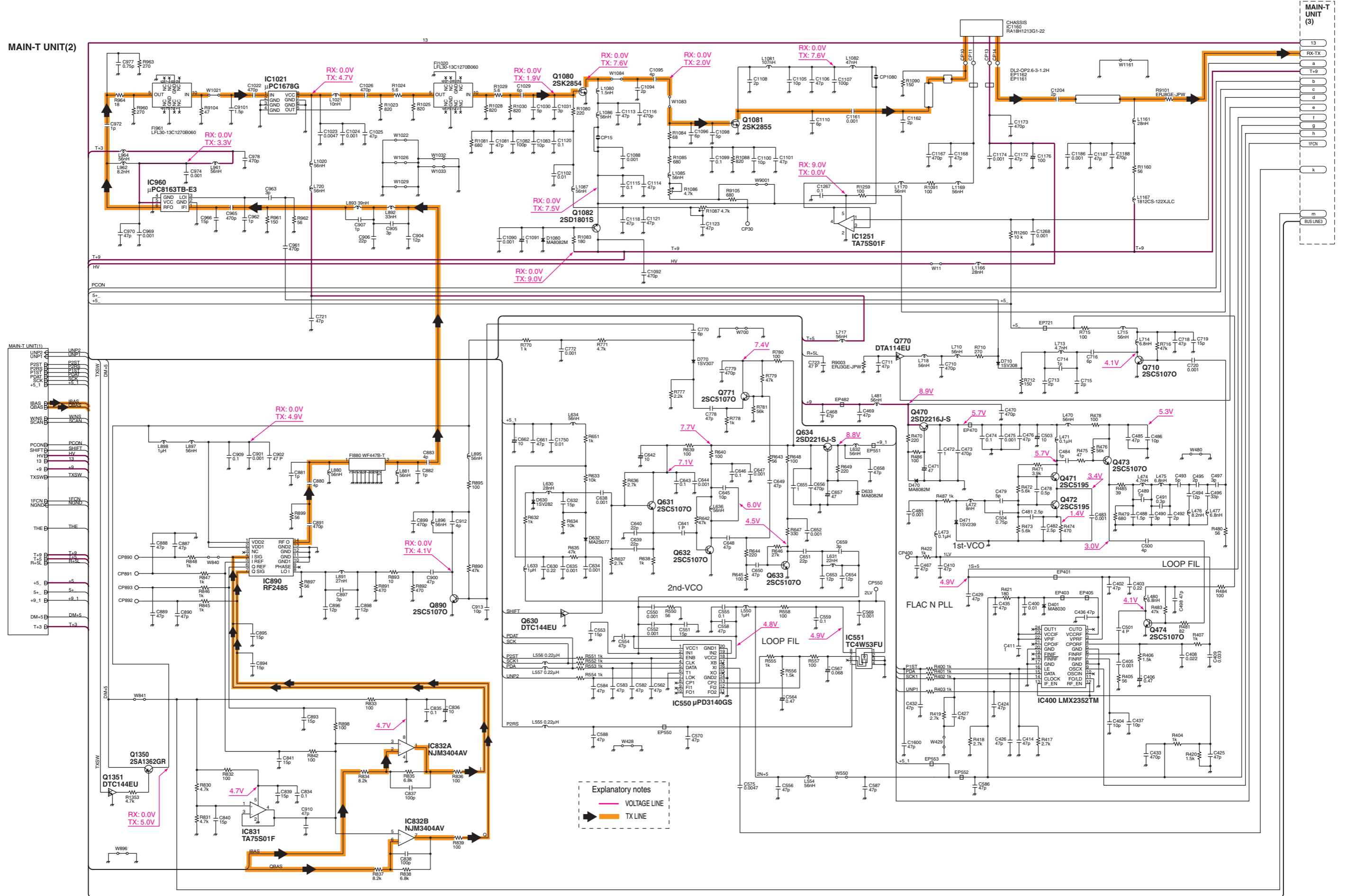
MAIN-R UNIT(3)
MAIN-R UNIT (2)

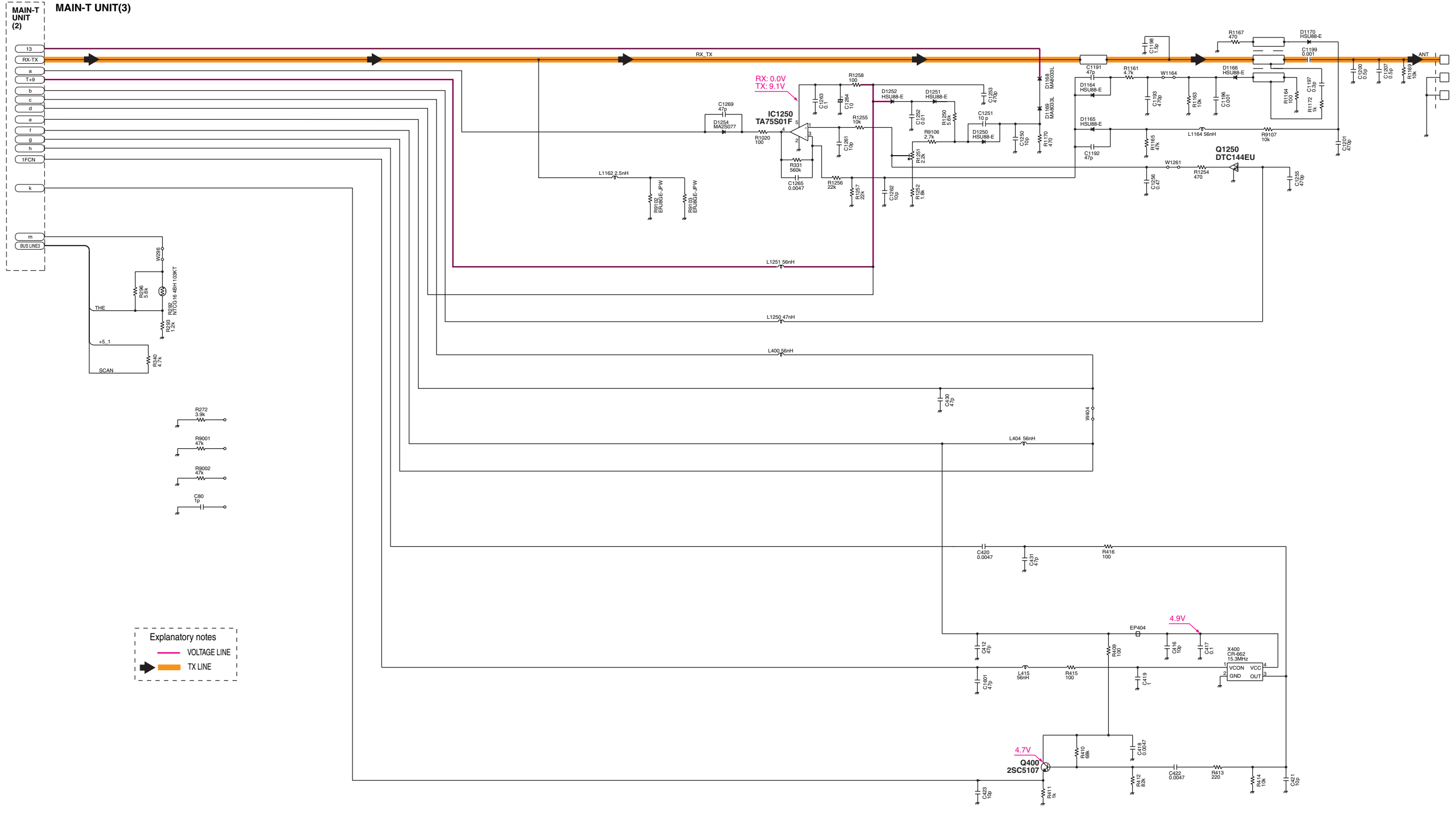


Explanatory notes
 RX LINE

MAIN-T UNIT(2)

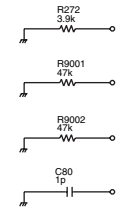
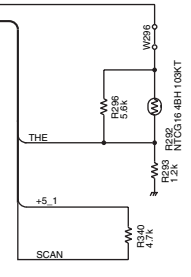
MAIN-T UNIT (3)





MAIN-T UNIT(2)

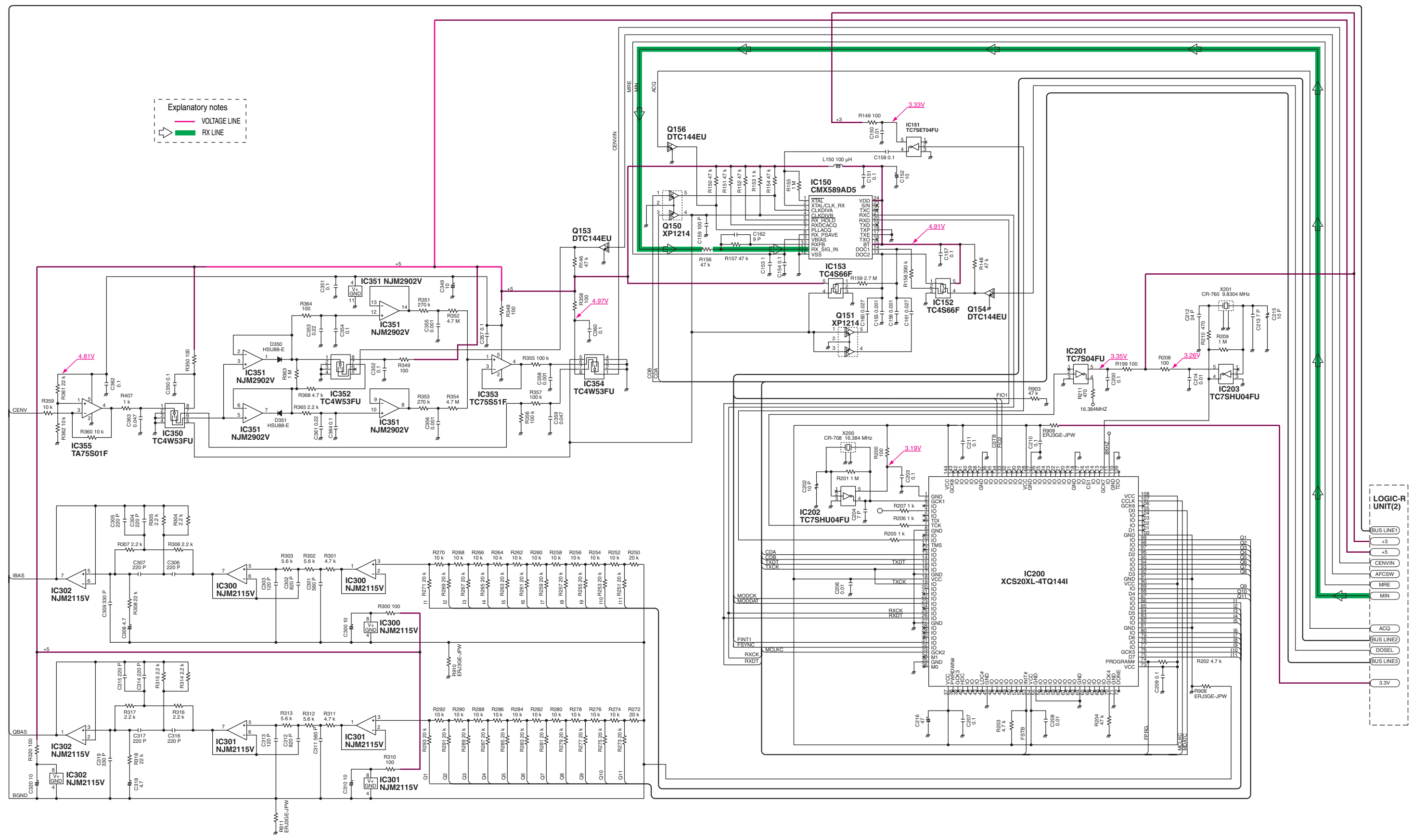
- 13
- RX-TX
- a
- T-g
- b
- c
- d
- e
- f
- g
- h
- 1FCN
- k
- m
- BUS LINES



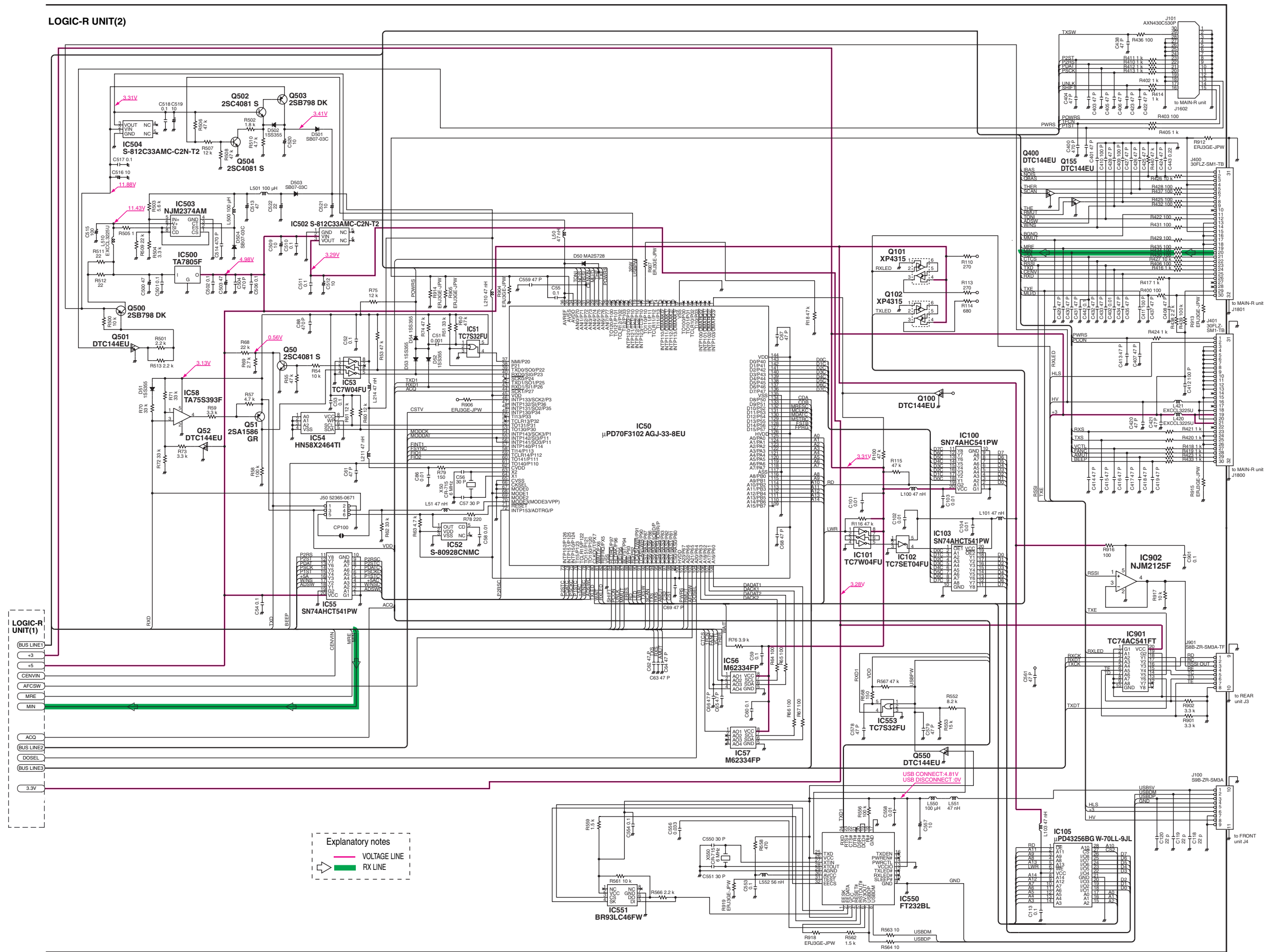
Explanatory notes
— VOLTAGE LINE
— TX LINE

11-3 LOGIC-R UNIT

LOGIC-R UNIT(1)

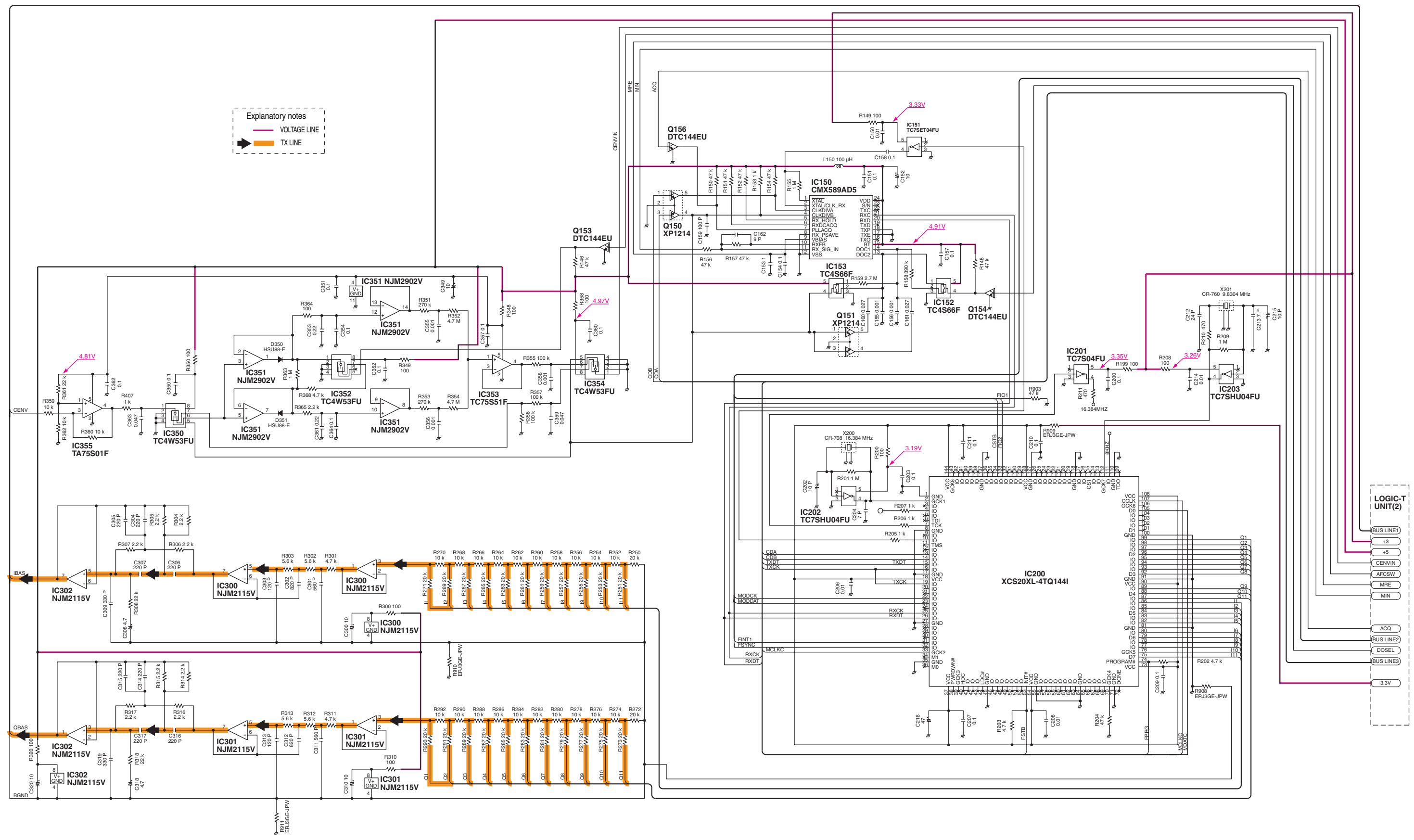


LOGIC-R UNIT(2)

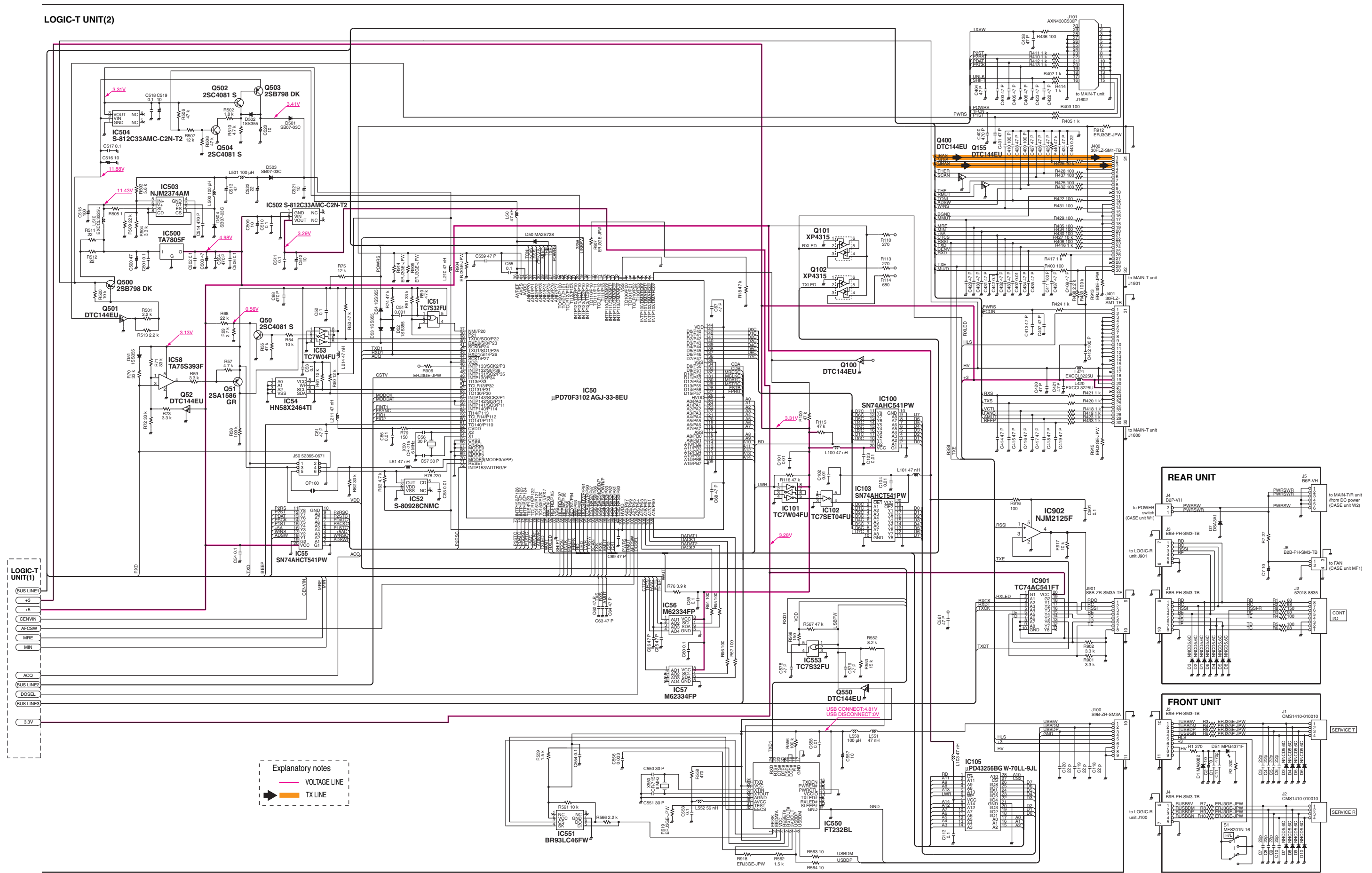


11-4 LOGIC-T UNIT

LOGIC-T UNIT(1)



LOGIC-T UNIT(2)



Explanatory notes
— VOLTAGE LINE
— TX LINE

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