

July 2013



SERVICE MANUAL ADDENDUM

IC-M400BB

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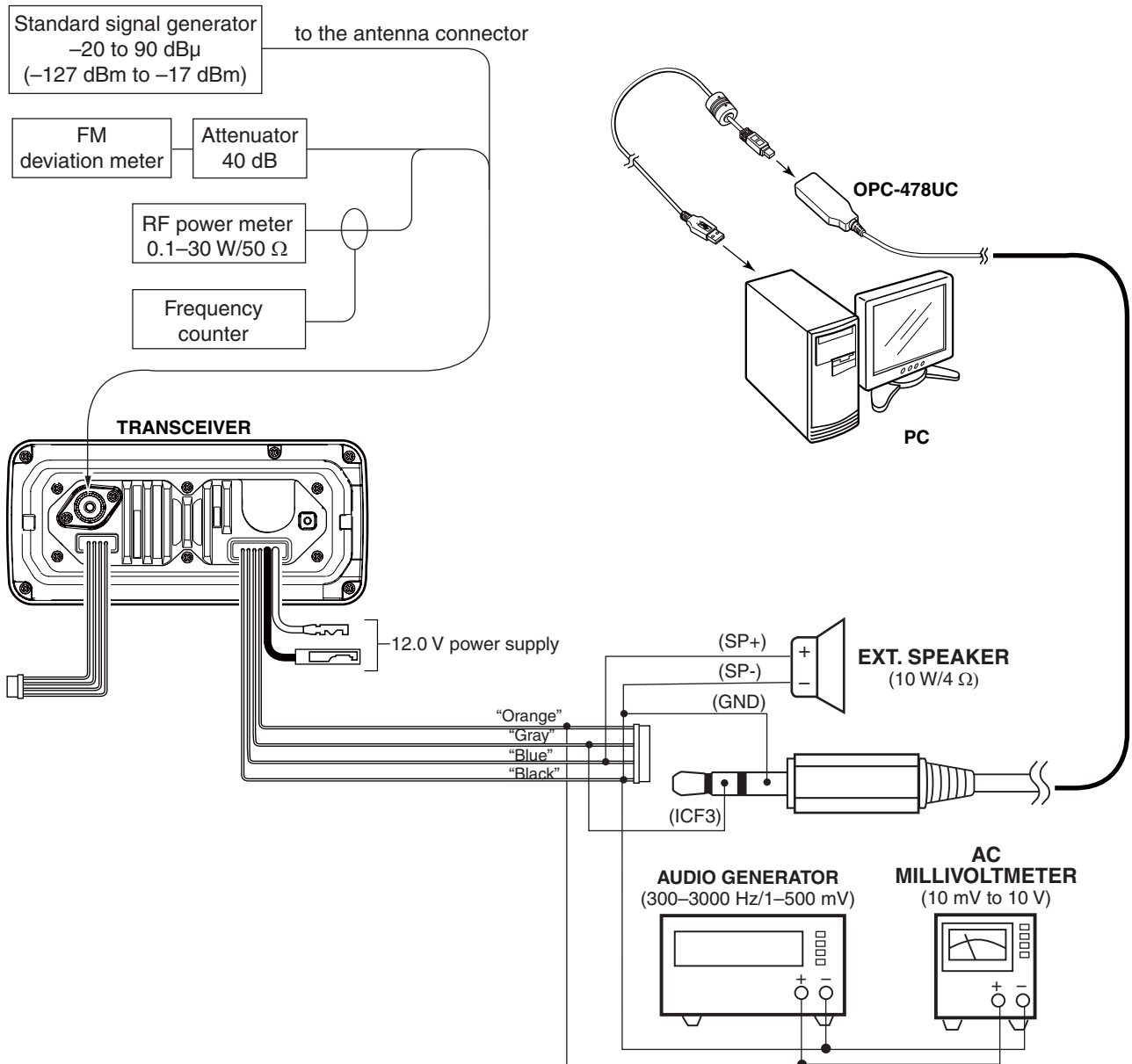
ADJUSTMENT PROCEDURE

1 PREPARATION

REQUIRED EQUIPMENTS

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
Adjustment software	ADJ-M324 (Revision 1.0 or later)	Cloning cable	OPC-478UC
Power supply	Voltage : 12.0 V Current capacity : More than 10 A		
RF power meter (50 Ω terminated)	Measuring range : 0.1–30 W Frequency range : 100–300 MHz SWR : Less than 1.2 : 1	Frequency counter	Range : 0.1–300 MHz Accuracy : ±1 ppm or better Input level : Less than 1 mW
Modulation Analyzer	Frequency range : 30–300 MHz Measuring range : 0 to ±10 kHz	Standard signal generator (SSG)	Frequency range : 0.1–300 MHz Output level : -20 dBμ to 90 dBμ (-127 to -17 dBm)
AC millivoltmeter	Measuring range : 10 mV to 10 V		
Oscilloscope	Frequency range : DC–20 MHz Measuring range : 0.01–20 V	Attenuator	Attenuation : 40 dB Capacity : More than 30 W
Audio generator (AG)	Frequency range : 300–3000 Hz Output level : 1–500 mV	External speaker	Input impedance : 4 Ω Capacity : More than 10 W

CONNECTION



■ ADJUSTMENT FREQUENCY FOR THE SQUELCH ADJUSTMENT

Before starting the adjustments, use the cloning software to Clone the adjustment frequency.

- CH116 : 163.425 MHz
- WX10 : 163.275 MHz

■ ADJUSTMENT UTILITY

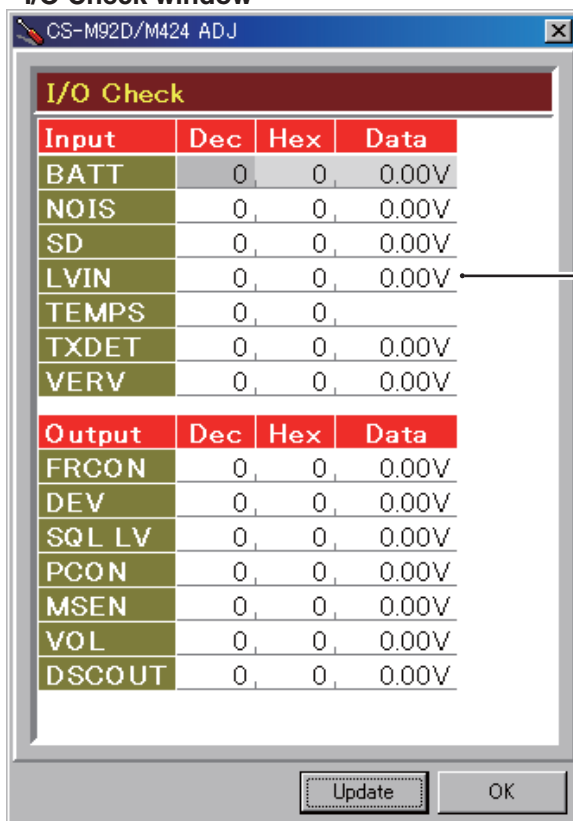
Adjust Utility			
Setting			
CH Group	USA		
CH No.	16		
RF Power	High		
DSC/ATIS	OFF		
AF Level	3		
SQL Level	Open		
MIC EXT	OFF		
PTT	OFF		
Adjust			
Ref. Freq.	0	[#####-----]	
RF Power (High)	0	[#####-----]	
RF Power (Low)	0	[#####-----]	
RF Power (E-Low)	0	[#####-----]	
MOD	0	[#####-----]	
DSC (1300Hz)	0	[#####-----]	
DSC (2100Hz)	0	[#####-----]	
ATIS (1300Hz)	0	[#####-----]	
ATIS (2100Hz)	0	[#####-----]	
MSENS (EXT)	0	[#####-----]	
MSENS (INT)	0	[#####-----]	
BPF	0	[#####-----]	[Enter] to Sweep
SQL (Threshold)	0	[-----]	[Enter] to Capture
SQL (Tight)	0	[-----]	[Enter] to Capture

2 FREQUENCY ADJUSTMENTS

Select an adjustment item using [↑] / [↓], and then set to the specified value using [←] / [→] on the connected PC's keyboard.

ADJUSTMENT	TRANSCIVER'S CONDITION	OPERATION	ADJUSTMENT ITEM	VALUE
PLL LOCK VOLTAGE (VERIFICATION)	1 • Channel : 16 • Receiving	1) Connect an RF power meter (or a dummy load) to the antenna connector. 2) Verify that the lock voltage is in the specified range on the "I/O check window" (see the illust below).	[LVIN] (I/O check window)	2.0 V ±0.5 V (Verify)
	2 • Channel : 16 • TX power : Low • Transmitting			1.9 V ±0.5 V (Verify)
REFERENCE FREQUENCY	1 • Channel : 16 • TX power : Low • Transmitting	1) Connect an RF power meter (or a dummy load) to the antenna connector. 2) Loose couple a frequency counter to the antenna connector. 3) Adjust the TX frequency.	[Ref. Freq.]	156.8000 MHz (±100 Hz)

• I/O Check window



Lock voltage is displayed here.

(The values shown above are exsample only.
Each transceiver has own values.)

3 RECEIVE ADJUSTMENTS

Select an adjustment item using [↑] / [↓], and then set to the specified value using [←] / [→] on the connected PC's keyboard.

ADJUSTMENT	TRANSCEIVER'S CONDITION	OPERATION	ADJUSTMENT ITEM	VALUE	
SQUELCH -Threshold-	1	<ul style="list-style-type: none"> Channel : CH116* Receiving 	<ul style="list-style-type: none"> Connect a signal generator to the antenna connector, and then set it as shown below. Frequency : 163.425 MHz[†] 163.275 MHz* Modulation : 1 kHz Deviation : ±3.0 kHz Level : The RF level where the SINAD is 25 dB[†] -12.0 dBμ (-119 dBm)* 	[SQL (threshold)]	Push [Enter] . (Automatic adjustment)
-Tight-	2	<ul style="list-style-type: none"> Set the SSG as shown below. Level : 3.5 dBμ (-103.5 dBm)[†] -2.5 dBμ (-109.5 dBm)* 	[SQL (tight)]		

[†]; For all models except [USA] *; For only [USA] versions.

4 TRANSMIT ADJUSTMENTS

Select an adjustment item using [↑] / [↓], and then set to the specified value using [←] / [→] on the connected PC's keyboard.

ADJUSTMENT	TRANSCEIVER'S CONDITION	OPERATION	ADJUSTMENT ITEM	VALUE
TX POWER -High power-	1	1) Set the power supply voltage to 13.8 V. 2) Connect an RF power meter to the antenna connector. 3) Adjust the TX power.	[Power (High)]	22.5 W
-Low power-	2		[Power (Low)]	0.75 W
DEVIATION	1	1) Connect a modulation analyzer to the antenna connector, through an attenuator, and then set it as shown below. HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P±P)/2 2) Connect an audio generator (output impedance=600 Ω) to the "AF/MIC" line of [CMD-MIC], and then set it as shown below. Frequency : 1 kHz Waveform : Sine wave Level : 280 mVrms	[MOD]	±4.35 ±0.05 kHz
MODULATION SENSITIVITY	1	<ul style="list-style-type: none"> Set the audio generator as below. Level : 28 mVrms 	[MSENS (EXT)]	±3.0 ±0.2 kHz

PARTS LIST

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1150002470	IC RA33H1516M1-225	T	73.9/48.1
IC2	1110006670	S.IC NJM2730F-TE1-#ZZZB	T	65.9/16.0
IC101	1130016080	S.IC GP214D <SEI>	T	91.4/14.3
IC201	1110007320	S.IC NJM2591V-TE1-#ZZZB	T	97.0/18.6
IC202	1110006490	S.IC LMV321IDCKR	T	111.2/14.3
IC301	1110007320	S.IC NJM2591V-TE1-#ZZZB	B	32.0/28.3
IC502	1130011770	S.IC CD4066BPWR	B	54.0/20.3
IC503	1130011770	S.IC CD4066BPWR	B	74.5/10.3
IC504	1130011770	S.IC CD4066BPWR	B	74.2/16.7
IC505	1130007021	S.IC TC7S66FU(TE85LF)	B	63.7/10.3
IC506	1110006470	S.IC LMV324IPWR	B	8.2/46.4
IC511	1180003480	S.REG NJU7772F33-TE1-#ZZZB	B	28.0/15.3
IC512	1180002781	REG KIA7805API-U/PF	T	44.7/28.7
IC513	1110006470	S.IC LMV324IPWR	T	43.7/21.1
IC514	1190001350	S.IC M62364FP 600D	B	15.5/16.2
IC515	1110006740	S.IC LMV358IPWR	B	12.0/14.3
IC701	1110007900	IC LA4625-E	B	18.2/11.0
IC702	1110006740	S.IC LMV358IPWR	B	46.5/20.3
IC703	1130007021	S.IC TC7S66FU(TE85LF)	B	39.0/20.3
IC703	1130007021	S.IC TC7S66FU(TE85LF)	B	52.5/21.5
IC704	1130007021	S.IC TC7S66FU(TE85LF)	B	51.9/36.1
IC801	1130011760	S.IC CD4094BPWR	B	37.7/34.9
IC802	1130011760	S.IC CD4094BPWR	B	57.5/25.3
IC901	1130009981	S.IC TC7W53FK(TE85LF)	T	60.0/26.2
IC902	1190003240	S.IC LC70301W-UIC-H	B	90.1/31.1
IC903	1180003820	S.REG NJM2847F3-011-TE1-#HZZH	B	62.6/48.6
IC904	1130009981	S.IC TC7W53FK(TE85LF)	B	60.2/48.6
IC905	1110006490	S.IC LMV321IDCKR	B	60.2/46.1
Q9	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	65.1/46.9
Q10	1510001090	S.TRA KTA2015Y-RTK/P	B	71.0/49.3
Q11	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	76.8/46.1
Q12	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	105.0/29.6
Q13	1530002881	S.TRA 2SC4226-T1 Y24 (R24)	B	106.5/25.2
Q14	1590004060	S.TRA LDTCL114EET1G <SLVJ>	B	106.0/19.5
Q15	1590004060	S.TRA LDTCL114EET1G <SLVJ>	B	102.3/17.5
Q21	1520000840	S.TRA KTA1664Y-RTF/P	T	120.9/44.7
Q22	1530003900	S.TRA KTC4075 BL-RTK/P	T	116.7/31.8
Q23	1510001090	S.TRA KTA2015Y-RTK/P	T	93.6/20.3
Q24	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	127.1/30.0
Q201	1580000751	S.FET 3SK294(TE85LF)	B	115.2/16.3
Q202	1580000731	S.FET 3SK293(TE85LF)	T	123.2/12.3
Q203	1530003950	S.TRA KTC4080 Y-RTK/P	T	129.3/22.0
Q302	1580000731	S.FET 3SK293(TE85LF)	B	9.7/51.7
Q303	1530003950	S.TRA KTC4080 Y-RTK/P	B	78.2/17.4
Q401	1580000751	S.FET 3SK294(TE85LF)	B	28.4/23.7
Q402	1580000731	S.FET 3SK293(TE85LF)	B	28.1/26.4
Q501	1520000380	TRA 2SB1143 S	B	78.3/10.8
Q502	1590003800	S.TRA KTC811U-GR-RTK/P	B	9.7/41.4
Q503	1560000541	S.FET 2SK880-Y(T5RICOMF)	B	8.2/38.2
Q504	1590004050	S.TRA LDTA144EET1G <SLVJ>	B	82.8/13.1
Q505	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	82.8/5.4
Q506	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	68.2/35.7
Q511	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	70.7/33.2
Q512	1590004710	S.FET TPC6111(TE85LF)	B	78.6/49.6
Q701	1530003900	S.TRA KTC4075 BL-RTK/P	T	81.2/50.3
Q702	1530003900	S.TRA KTC4075 BL-RTK/P	T	83.3/47.0
D7	1750002780	S.DIO HVD144AKRF-E	T	98.0/51.7
D8	1750002780	S.DIO HVD144AKRF-E	T	110.3/47.0
D11	1750002880	S.DIO DB2J31000L	T	116.8/47.7
D12	1790000691	S.DIO HSM88ASRTR-E	T	104.1/45.1
D13	1790000691	S.DIO HSM88ASRTR-E	T	62.8/5.2
D14	1750002060	S.DIO RN752TE-21	T	60.4/15.7
D16	1750002060	S.DIO RN752TE-21	T	43.5/43.4
D18	1790000691	S.DIO HSM88ASRTR-E	T	41.2/41.4
D19	1750002780	S.DIO HVD144AKRF-E	T	39.6/52.6
D21	1750001910	S.DIO HVD144AKRF-E	T	42.8/53.5
D22	1750001810	S.DIO L1SS400T1G <SLVJ>	T	123.1/37.7
D501	1790001990	S.SVAR EZJ0V080DA	T	106.1/27.3
D502	1790001990	S.SVAR EZJ0V080DA	T	97.3/27.3
D503	1790001990	S.SVAR EZJ0V080DA	T	80.5/8.2
D504	1790001990	S.SVAR EZJ0V080DA	B	123.0/22.0
D601	1790000700	DIO DSA3A1	T	113.8/22.0
FI201	2040002060	S.SAW HDF160F SMD-3 <SEI>	T	101.7/8.2
FI202	2030000930	S.MON 21L715A3(IMD) 21.7 MHz (FL-450)	T	
FI203	2030000940	S.MON 21L715A3 21.7 MHz (FL-451)	T	
FI204	2020002480	S.CER LTWC450E1 <JJE>	B	
FI302	2030000950	S.MON 30L715A(IMD) 30.875 MHz (FL-452)	B	
FI303	2030000960	S.MON 30L715A 30.875 MHz (FL-453)	B	
FI304	2020002480	S.CER LTWC450E1 <JJE>	T	
X101	6050013300	S.XTA CR-921(SX-5S3 21.25 MHz) <SKD>	T	65.0/10.1
X201	6070000310	S.DIS JTBM450CX70 <JJE>	T	90.8/5.6
X301	6070000310	S.DIS JTBM450CX70 <JJE>	T	110.4/5.6
X302	6050013310	S.XTA CR-922(SX-32S 30.425 MHz) <SKD>	T	105.3/17.8

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
X401	6050013280	S.XTA CR-923 DSB321 SCL 41.88333 MHz	T	118.0/10.9
X901	6060000880	S.CER CSTCE8M19G55	B	61.6/36.7
L6	6200013760	S.COI MLK1005S82NJT	T	73.7/17.9
L11	6200013750	S.COI MLK1005SR10JT	T	64.4/49.0
L19	6200010770	S.COI C2520C-R68G-A	T	92.4/45.2
L20	6200014320	S.COI 0.80-3.0-5TR 41.0N <COMO>	T	90.3/51.7
L21	6200014330	S.COI 0.80-2.7-5TR 35.0N <COMO>	T	111.3/54.2
L22	6200014330	S.COI 0.80-2.7-5TR 35.0N <COMO>	T	118.7/56.4
L23	6200012700	S.COI 0.50-2.0-6TL 35.0N <COMO>	T	104.4/49.9
L24	6200011210	S.COI C2012C-1R0J-A	T	101.5/44.6
L201	6200009920	S.COI C2012C-1R0J-A	[USA-01]	
L202	6200009920	S.COI C2012C-1R0J-A	[USA-02]	
L202	6200010320	S.COI C2012C-R10G-A	T	116.0/44.9
L203	6200011680	S.COI C2012C-R15G-A	T	123.3/44.2
L204	6200011200	S.COI LQW18ANR12G00D	T	115.4/34.8
L206	6200013750	S.COI LQW18ANR12G00D	T	115.2/28.4
L207	6200009620	S.COI MLK1005SR10JT	T	112.5/33.0
L211	6200009141	S.COI MLG1608B 68NJ-T	T	109.8/34.7
L301	6200009920	S.COI NLV25T-6R8J	T	84.3/17.0
L302	6200009920	S.COI C2012C-R10G-A	B	129.4/39.7
L303	6200010330	S.COI C2012C-R10G-A	B	129.4/39.4
L304	6200007360	S.COI C2012C-R18G-A	B	129.4/34.1
L305	6200013780	S.COI ELJND R47J	B	123.9/28.6
L306	6200013780	S.COI MLK1005S56NJT	B	128.9/26.9
L401	6200010910	S.COI LQW18AN56NG00D	B	128.9/25.3
L402	6200010910	S.COI LQW18AN56NG00D	T	125.4/12.2
L403	6200010910	S.COI LQW18AN56NG00D	T	130.3/11.8
L404	6200009250	S.COI LQW18ANR22G00D (LQW1608AR22G00)	T	130.3/16.6
L901	6200005041	S.COI NLV25T-220J	B	127.1/22.0
L902	6200002861	S.COI NLV25T-4R7J	B	41.0/37.4
L903	6200002861	S.COI NLV25T-4R7J	B	41.0/32.4
R1	70300010040	S.RES ERJ2GEJ-JPW	T	71.9/16.8
R2	7030008370	S.RES ERJ2GEJ 561 X (560)	T	73.1/16.4
R3	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	78.3/18.9
R4	7030005160	S.RES ERJ2GEJ 105 X (1M)	T	76.6/16.5
R35	7030007270	S.RES ERJ2GEJ 151 X (150)	B	70.7/28.7
R36	7030004980	S.RES ERJ2GEJ 101 X (100)	T	71.5/18.3
R51	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	62.4/46.4
R52	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	64.4/48.0
R53	7030005000	S.RES ERJ2GEJ 471 X (470)	B	60.5/44.1
R61	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	67.2/35.5
R62	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	T	69.7/47.1
R63	70300010040	S.RES ERJ2GEJ-JPW	T	69.2/45.9
R66	7030005530	S.RES ERJ2GEJ 100 X (10)	T	64.4/50.7
R67	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	65.3/49.0
R68	7030007340	S.RES ERJ2GEJ 153 X (15K)	T	76.5/46.8
R69	7030004980	S.RES ERJ2GEJ 101 X (100)	T	68.0/49.0
R70	70300010040	S.RES ERJ2GEJ-JPW	T	63.0/49.0
R71	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	86.0/51.8
R72	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	84.4/51.8
R73	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	91.9/48.0
R74	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	90.2/48.0
R75	7030007240	S.RES ERJ2GEJ680U (68)	T	69.2/43.9
R76	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	80.3/47.6
R78	7030007280	S.RES ERJ2GEJ 331 X (330)	T	77.2/48.1
R79	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	T	76.9/49.4
R80	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	76.4/51.2
R82	7030005240	S.RES ERJ2GEJ 473 X (47K)	T	74.6/51.2
R83	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	76.4/45.8
R84	7030007250	S.RES ERJ2GEJ 220 X (22)	T	72.9/45.8
R87	7030005000	S.RES ERJ2GEJ 471 X (470)	T	72.9/51.2
R88	70300010040	S.RES ERJ2GEJ-JPW	T	71.2/51.2
R91	7030005080	S.RES ERJ2GEJ 823 X (82K)	T	115.5/62.0
R96	7030009200	S.RES ERJ2GEJ 390 X (39)	T	107.2/44.4
R97	7030009200	S.RES ERJ2GEJ 390 X (39)	[USA-01]	
R97	7030009200	S.RES ERJ2GEJ 390 X (39)	[USA-02]	
R97	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	[USA]	
R97	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	[USA-01]	
R97	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	[USA-02]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[UK]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[EUR]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[HOL]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[FRG]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[FRG-01]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[HOL-01]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[FRG-01]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[EUR-02]	

Eqv.= This component is equivalent to the REF No. component listed above, and may be substituted on parts orders and repairs.

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

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
R99	7030010040	S.RES ERJ2GGEJ-JPW [USA]	T	112.4/43.0
	7030010430	S.RES ERJ2GGEJ 120 X (12) [UK]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [EUR]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [HOL]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [FRG]		
	7030010040	S.RES ERJ2GGEJ-JPW [USA-01]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [UK-01]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [EUR-01]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [HOL-01]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [FRG-01]		
	7030010040	S.RES ERJ2GGEJ-JPW [USA-02]		
	7030010430	S.RES ERJ2GGEJ 120 X (12) [EUR-02]		
R100	7030009280	S.RES ERJ2GGEJ 391 X [UK]	T	112.9/44.3
	7030009280	S.RES ERJ2GGEJ 391 X [EUR]		
	7030009280	S.RES ERJ2GGEJ 391 X [HOL]		
	7030009280	S.RES ERJ2GGEJ 391 X [FRG]		
	7030009280	S.RES ERJ2GGEJ 391 X [UK-01]		
	7030009280	S.RES ERJ2GGEJ 391 X [EUR-01]		
	7030009280	S.RES ERJ2GGEJ 391 X [HOL-01]		
	7030009280	S.RES ERJ2GGEJ 391 X [FRG-01]		
	7030009280	S.RES ERJ2GGEJ 391 X [EUR-02]		
R101	7030007300	S.RES ERJ2GGEJ 332 X (3.3K)	B	104.7/25.7
R102	7030005030	S.RES ERJ2GGEJ 152 X (1.5K)	B	104.3/24.3
R103	7030005050	S.RES ERJ2GGEJ 103 X (10K)	B	104.0/19.6
R104	7030005120	S.RES ERJ2GGEJ 102 X (1K)	B	104.0/17.9
R116	7410001150	S.ARR EXB28V471JX	T	57.9/14.8
R117	7030005050	S.RES ERJ2GGEJ 103 X (10K)	T	69.8/11.8
R118	7030010040	S.RES ERJ2GGEJ-JPW	T	68.5/12.2
R119	7030005240	S.RES ERJ2GGEJ 473 X (47K)	T	60.9/8.7
R120	7030005050	S.RES ERJ2GGEJ 103 X (10K)	T	61.3/10.1
R201	7030005110	S.RES ERJ2GGEJ 224 X (220K)	T	119.0/44.1
R202	7030005090	S.RES ERJ2GGEJ 104 X (100K)	T	119.0/46.9
R203	7030005240	S.RES ERJ2GGEJ 473 X (47K)	T	121.7/42.7
R204	7030005090	S.RES ERJ2GGEJ 104 X (100K)	T	120.8/42.7
R205	7030005710	S.RES ERJ2GGEJ 121 X (120)	T	126.0/46.5
R206	7030004990	S.RES ERJ2GGEJ 221 X (220)	T	125.8/44.5
R207	7030005580	S.RES ERJ2GGEJ 560 X (56)	T	121.0/46.9
R211	7030008300	S.RES ERJ2GGEJ 184 X (180K)	T	118.9/31.7
R212	7030007350	S.RES ERJ2GGEJ 393 X (39K)	T	118.9/32.6
R213	7030008300	S.RES ERJ2GGEJ 184 X (180K)	T	114.8/31.4
R214	7030005240	S.RES ERJ2GGEJ 473 X (47K)	T	114.3/33.0
R221	7030005530	S.RES ERJ2GGEJ 100 X (10)	T	119.9/28.1
R222	7030007290	S.RES ERJ2GGEJ 222 X (2.2K) [USA]	T	111.8/28.4
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [UK]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [EUR]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [HOL]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [FRG]		
	7030007290	S.RES ERJ2GGEJ 222 X (2.2K) [USA-01]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [UK-01]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [EUR-01]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [HOL-01]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [FRG-01]		
	7030007290	S.RES ERJ2GGEJ 222 X (2.2K) [USA-02]		
	7030007300	S.RES ERJ2GGEJ 332 X (3.3K) [EUR-02]		
R223	7030007570	S.RES ERJ2GGEJ 122 X (1.2K)	T	110.9/26.5
R224	7030005030	S.RES ERJ2GGEJ 152 X (1.5K)	T	93.1/23.9
R225	7030005090	S.RES ERJ2GGEJ 104 X (100K)	T	93.1/22.1
R226	7030007300	S.RES ERJ2GGEJ 332 X (3.3K)	T	94.9/22.1
R227	7030004990	S.RES ERJ2GGEJ 221 X (220)	T	93.7/18.5
R229	7030007290	S.RES ERJ2GGEJ 222 X (2.2K)	T	107.2/33.5
R231	7030007290	S.RES ERJ2GGEJ 222 X (2.2K)	T	92.8/10.1
R232	7030005000	S.RES ERJ2GGEJ 471 X (470)	T	94.2/9.7
R233	7030004970	S.RES ERJ2GGEJ 470 X (47)	T	88.6/18.8
R234	7030005030	S.RES ERJ2GGEJ 152 X (1.5K)	T	88.2/17.6
R235	7030005050	S.RES ERJ2GGEJ 103 X (10K)	T	97.3/16.6
R236	7030005040	S.RES ERJ2GGEJ 472 X (4.7K)	T	99.7/18.1
R237	7030005040	S.RES ERJ2GGEJ 472 X (4.7K)	T	98.8/18.1
R238	7030004980	S.RES ERJ2GGEJ 101 X (100)	T	100.6/18.1
R239	7030005050	S.RES ERJ2GGEJ 103 X (10K)	T	101.5/18.1
R242	7030008410	S.RES ERJ2GGEJ 392 X (3.9K)	T	71.5/12.7
R251	7030005170	S.RES ERJ2GGEJ 474 X (470K)	T	86.4/12.0
R252	7030009270	S.RES ERJ2GGEJ 821 X (820)	T	86.8/8.9
R253	7030005060	S.RES ERJ2GGEJ 333 X (33K)	T	85.9/8.9
R256	7030005050	S.RES ERJ2GGEJ 103 X (10K)	T	75.9/7.7
R257	7030005050	S.RES ERJ2GGEJ 103 X (10K)	T	75.9/8.9
R261	7030003860	S.RES ERJ3GE JPW V	T	127.9/40.8
R262	7030003860	S.RES ERJ3GE JPW V	T	127.9/39.3
R263	7030003860	S.RES ERJ3GE JPW V	T	127.9/36.8
R264	7030003860	S.RES ERJ3GE JPW V	T	124.4/31.4
R301	7030005170	S.RES ERJ2GGEJ 474 X (470K)	B	127.2/34.0
R302	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	127.2/32.2
R303	7030005100	S.RES ERJ2GGEJ 154 X (150K)	B	128.9/28.6
R304	7030007350	S.RES ERJ2GGEJ 393 X (39K)	B	127.5/28.2
R305	7030005530	S.RES ERJ2GGEJ 100 X (10)	B	124.7/33.6
R306	7030007300	S.RES ERJ2GGEJ 332 X (3.3K)	B	124.6/27.8
R311	7030005010	S.RES ERJ2GGEJ 681 X (680)	B	126.0/25.2
R312	7030005010	S.RES ERJ2GGEJ 681 X (680)	B	111.2/17.6
R313	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	113.1/16.3
R314	7030007300	S.RES ERJ2GGEJ 332 X (3.3K)	B	118.8/16.3
R315	7030007280	S.RES ERJ2GGEJ 331 X (330)	B	116.6/14.8
R321	7030004970	S.RES ERJ2GGEJ 470 X (47)	T	113.0/18.0
R322	7030009140	S.RES ERJ2GGEJ 272 X (2.7K)	T	112.5/10.1
R323	7030005000	S.RES ERJ2GGEJ 471 X (470)	T	113.8/9.7
R324	7030005220	S.RES ERJ2GGEJ 223 X (22K)	T	110.0/18.0
R401	7030004970	S.RES ERJ2GGEJ 470 X (47)	T	119.3/13.0
R402	7030005160	S.RES ERJ2GGEJ 105 X (1M)	T	120.9/13.9
R403	7030006610	S.RES ERJ2GGEJ 394 X (390K)	T	122.2/14.4
R404	7030005060	S.RES ERJ2GGEJ 333 X (33K)	T	120.9/10.3
R405	7030007340	S.RES ERJ2GGEJ 153 X (15K)	T	123.2/10.3
R406	7030004980	S.RES ERJ2GGEJ 101 X (100)	T	125.8/14.4
R407	7030004970	S.RES ERJ2GGEJ 470 X (47)	T	123.1/14.4
R408	7030009290	S.RES ERJ2GGEJ 562 X (5.6K)	T	120.9/11.2
R411	7030005160	S.RES ERJ2GGEJ 105 X (1M)	T	128.3/18.6
R412	7030006610	S.RES ERJ2GGEJ 394 X (390K)	T	129.8/19.5
R413	7030005720	S.RES ERJ2GGEJ 563 X (56K)	T	131.2/21.6

Eqv.= This component is equivalent to the REF No. component listed above, and may be substituted on parts orders and repairs.

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
R414	7030005240	S.RES ERJ2GGEJ 473 X (47K)	T	129.7/24.7
R415	7030005530	S.RES ERJ2GGEJ 100 X (10)	T	124.9/19.8
R416	7030004970	S.RES ERJ2GGEJ 470 X (47)	T	128.5/19.8
R417	7030005530	S.RES ERJ2GGEJ 100 X (10)	T	125.3/21.0
R501	7030012300	S.RES ERJ2PRKF 1502X (15K)	B	9.0/49.8
R502	7030011660	S.RES ERJ2PRKF 1002 (10K)	B	10.7/49.8
R503	7030011660	S.RES ERJ2PRKF 1002 (10K)	B	12.1/50.8
R504	7030007280	S.RES ERJ2GGEJ 331 X (330)	B	12.1/52.6
R505	7030007280	S.RES ERJ2GGEJ 331 X (330)	B	12.1/51.7
R506	7030005120	S.RES ERJ2GGEJ 102 X (1K)	B	10.7/48.9
R511	7030011150	S.RES ERJ2GGEJ 2R7 X (2.7)	T	42.2/43.6
R512	7030011150	S.RES ERJ2GGEJ 2R7 X (2.7)	T	37.7/43.6
R513	7030011150	S.RES ERJ2GGEJ 2R7 X (2.7)	T	41.2/43.6
R514	7030011150	S.RES ERJ2GGEJ 2R7 X (2.7)	T	40.7/51.0
R515	7030011150	S.RES ERJ2GGEJ 2R7 X (2.7)	T	41.7/51.0
R517	7030005240	S.RES ERJ2GGEJ 473 X (47K)	T	77.8/16.0
R521	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	30.9/33.5
R522	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	31.8/33.5
R523	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	30.0/33.5
R524	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	34.3/23.0
R525	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	32.5/23.0
R526	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	57.5/6.5
R527	7030005040	S.RES ERJ2GGEJ 472 X (4.7K)	B	34.4/34.0
R528	7030005530	S.RES ERJ2GGEJ 100 X (10)	B	34.4/34.9
R529	7030005060	S.RES ERJ2GGEJ 333 X (33K)	B	65.4/4.7
R530	7030005600	S.RES ERJ2GGEJ 273 X (27K)	B	65.4/5.6
R531	7030007300	S.RES ERJ2GGEJ 332 X (3.3K)	B	28.7/30.8
R532	7030007290	S.RES ERJ2GGEJ 222 X (2.2K)	B	27.8/30.8
R533	7030005530	S.RES ERJ2GGEJ 100 X (10)	B	67.5/7.1
R535	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	33.4/23.0
R537	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	30.0/23.0
R539	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	53.0/25.1
R540	7030005160	S.RES ERJ2GGEJ 105 X (1M)	B	55.9/15.6
R541	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	57.8/21.4
R544	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	52.8/14.7
R545	7030005110	S.RES ERJ2GGEJ 224 X (220K)	B	50.7/23.9
R547	7030005110	S.RES ERJ2GGEJ 224 X (220K)	B	71.4/15.1
R548	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	78.1/9.1
R549	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	72.2/5.7
R550	7030005220	S.RES ERJ2GGEJ 223 X (22K)	B	60.1/8.5
R551	7030005040	S.RES ERJ2GGEJ 472 X (4.7K)	B	58.7/5.4
R552	7030005530	S.RES ERJ2GGEJ 100 X (10)	B	60.3/4.5
R553	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	62.0/4.5
R554	7030005090	S.RES ERJ2GGEJ 104 X (100K)	B	62.0/5.6
R555	7030008290	S.RES ERJ2GGEJ 183 X (18K)	B	59.5/11.5
R556	7030005040	S.RES ERJ2GGEJ 472 X (4.7K)	B	60.4/11.5
R557	7030008300	S.RES ERJ2GGEJ 184 X (180K)	B	60.4/13.2
R558	7030005240	S.RES ERJ2GGEJ 473 X (47K)	B	64.0/14.9
R559	7030005530	S.RES ERJ2GGEJ 100 X (10)	B	59.5/13.2
R560	7030005240	S.RES ERJ2GGEJ 473 X (47K)	B	59.5/14.9
R561	7030005210	S.RES ERJ2GGEJ 822 X (8.2K)	B	58.6/13.2
R562	7030008400	S.RES ERJ2GGEJ 182 X (1.8K)	B	63.4/16.9
R563	7030005100	S.RES ERJ2GGEJ 154 X (150K)	B	61.7/16.9
R564	7030008290	S.RES ERJ2GGEJ 183 X (18K)	B	61.7/16.0
R565	7030005030	S.RES ERJ2GGEJ 152 X (1.5K)	B	67.0/11.2
R566	7030007300	S.RES ERJ2GGEJ 332 X (3.3K)	B	67.0/12.9
R567	7030005040	S.RES ERJ2GGEJ 472 X (4.7K)	B	71.2/11.7
R568	7030005170	S.RES ERJ2GGEJ 474 X (470K)	B	63.8/19.1
R569	7030010040	S.RES ERJ2GGEJ-JPW	B	60.3/5.4
R571	703			

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
W1	7030012290	JUM RDS2T0R0		
W2	8900014871	CAB OPC-1332A-1(P0.5N40L100)		
W3	8900020400	CAB OPC-2216 <TJM>		
EP401	6910016330	S.BEA MMZ1005S 601CT-S	T	123.7/21.0
EP701	6910016330	S.BEA MMZ1005S 601CT-S	B	8.2/10.1
EP702	6910016330	S.BEA MMZ1005S 601CT-S	B	8.9/14.2
EP703	6910019100	S.BEA MPZ1608S101AT	B	20.0/33.0
EP704	6910019100	S.BEA MPZ1608S101AT	B	23.1/33.0
EP705	6910019100	S.BEA MPZ1608S101AT	B	12.7/26.4
EP706	6910019100	S.BEA MPZ1608S101AT	B	17.6/33.2

[LOGIC UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1140016243	S.IC STM32F100ZET6B(FX3338A3)	B	79.0/30.0
IC2	1110006740	S.IC LMV3581PWR	B	37.0/36.0
IC3	1130009981	S.IC TC7W53FK(TE85LF)	B	38.5/31.8
IC4	1180003570	S.REG NJM2830U1-33-TE1-#ZZZB	B	33.0/10.5
IC5	1130016110	S.IC TC7WH14FK(TE85LF)	B	54.6/13.3
IC6	1130008711	S.IC TC7SET04FU(T5LJF)	B	47.7/40.2
IC7	1130016110	S.IC TC7WH14FK(TE85LF)	B	54.5/39.0
IC8	1170000352	S.IC PC357N6J000F	B	127.0/36.0
IC9	1130016810	S.IC GT24C256-2GLI-TR <MSK>	B	84.0/49.5
IC10	1110007620	S.IC NJU7704F3-42A-TE1-#ZZZB	B	43.3/11.2
IC11	1110003650	S.IC NJM2211M-TE1-#ZZZB	B	34.5/45.5
IC12	1130009301	S.IC TC7SET08FU(T5LJF)	B	46.1/53.7
Q3	1590001330	S.TRA DTA114EUA T106	B	54.9/16.9
Q4	1530004140	S.TRA L2SC4081RT1G <SLVJ>	B	53.9/20.8
Q5	1530004140	S.TRA L2SC4081RT1G <SLVJ>	B	50.2/36.5
Q6	1510001151	S.TRA L2SA1576AST1G <SLVJ>	B	47.4/36.8
Q7	1560000541	S.FET 2SK880-Y(T5R1COMF)	B	53.0/35.3
Q8	1530004140	S.TRA L2SC4081RT1G <SLVJ>	B	134.2/36.7
Q9	1590000710	S.TRA DTC124EUA T106	B	132.2/38.9
D3	1750001810	S.DIO L1SS400T1G <SLVJ>	B	55.9/19.6
D4	1750001810	S.DIO L1SS400T1G <SLVJ>	B	130.5/33.2
D5	1750001180	S.DIO KDS122 RTK/P	B	134.2/33.6
D7	1790001990	S.VAR EZJPOV080DA	B	134.5/29.7
X1	6050012460	S.XTA CR-834(SMD-49/7.9872 MHz) <JJE>	B	97.5/27.5
R1	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	65.3/34.8
R2	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	65.3/35.8
R3	7410001130	S.ARR EXB28V102JX	B	49.5/30.5
R5	7030004970	S.RES ERJ2GEJ 470 X (47)	B	61.5/22.1
R7	7030010040	S.RES ERJ2GEJ-JPW	B	64.8/20.9
R11	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	72.0/43.3
R12	7410001230	S.ARR EXB28V101JX	B	58.5/32.5
R16	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	82.4/43.7
R17	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	46.3/51.8
R21	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	72.3/16.7
R22	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	73.7/16.3
R23	7410001130	S.ARR EXB28V102JX	B	58.8/26.0
R24	7410001140	S.ARR EXB28V104JX	B	64.0/24.4
R25	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	79.1/16.7
R26	7030005600	S.RES ERJ2GEJ 273 X (27K)	B	86.3/16.7
R27	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	86.9/14.7
	7030009290	S.RES ERJ2GEJ 562 X (5.6K) [USA]		
	7030008010	S.RES ERJ2GEJ 123 X (12K) [UK]		
	7030009710	S.RES ERJ2GEJ 203 X (20K) [EUR]		
	7030009710	S.RES ERJ2GEJ 203 X (20K) [HOL]		
	7030005060	S.RES ERJ2GEJ 333 X (33K) [FRG]		
	7030007290	S.RES ERJ2GEJ 222 X (2.2K) [USA-01]		
	7030009290	S.RES ERJ2GEJ 562 X (5.6K) [UK-01]		
	7030008010	S.RES ERJ2GEJ 123 X (12K) [EUR-01]		
	7030009710	S.RES ERJ2GEJ 203 X (20K) [HOL-01]		
	7030005060	S.RES ERJ2GEJ 333 X (33K) [FRG-01]		
	7030007290	S.RES ERJ2GEJ 222 X (2.2K) [USA-02]		
	7030008010	S.RES ERJ2GEJ 123 X (12K) [EUR-02]		
R28	7030011670	S.RES ERJ2RKF 3902 (39K)	B	85.1/12.9
R29	7030012320	S.RES ERJ2RKD 2203X (220K)	B	85.1/11.9
R34	7030004980	S.RES ERJ2GEJ 101 X (100)	B	92.8/27.2
R51	7030005530	S.RES ERJ2GEJ 100 X (10)	B	38.3/40.4
R52	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	108.2/27.5
R53	7030005170	S.RES ERJ2GEJ 474 X (470K)	B	35.3/39.8
R54	7030007350	S.RES ERJ2GEJ 393 X (39K)	B	33.7/50.4
R55	7030012740	S.RES ERJ2RHD 1602X (16.0K)	B	35.1/50.8
R56	7030008400	S.RES ERJ2GEJ 182 X (1.8K)	B	34.1/51.8
R57	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	31.9/50.4
R61	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	87.7/46.3
R62	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	87.7/45.3
R65	7030008010	S.RES ERJ2GEJ 123 X (12K)	B	45.7/8.3
R66	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	39.8/12.1
R67	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	40.2/10.7
R71	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	42.5/36.0
R73	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	32.5/36.2
R74	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	35.8/33.6
R75	7030004980	S.RES ERJ2GEJ 101 X (100)	B	34.0/32.1
R81	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	57.4/13.8
R82	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	56.9/16.9
R83	7030005530	S.RES ERJ2GEJ 100 X (10)	B	58.1/20.9
R84	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	54.4/18.7
R85	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	52.8/13.3
R90	7030005220	S.RES ERJ2GEJ 223 X (22K)	B	50.9/39.4
R91	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	49.5/39.0
R92	7030004970	S.RES ERJ2GEJ 470 X (47)	B	48.7/35.0
R95	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	54.0/32.5
R96	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	54.0/33.5
R97	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	55.5/35.8
R101	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	121.7/38.3
R102	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	122.2/35.1
R103	7030009270	S.RES ERJ2GEJ 821 X (820)	B	129.6/32.0
R106	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	136.0/34.6
R107	7030010430	S.RES ERJ2GEJ 120 X (12)	B	132.4/35.4
R108	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	134.5/28.8
R111	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	3.7/17.5
R113	7030003520	S.RES ERJ3GEYJ 472 V (4.7K)	B	5.7/18.0
R116	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	44.0/54.2
C1	4030016930	S.CER C1005 JB 1A 104K-T	B	70.5/16.7
C2	4030016930	S.CER C1005 JB 1A 104K-T	B	65.8/38.5
C3	4030016930	S.CER C1005 JB 1A 104K-T	B	87.7/43.3
C4	4030016930	S.CER C1005 JB 1A 104K-T	B	88.1/16.7

Eqv.= This component is equivalent to the REF No. component listed above, and may be substituted on parts orders and repairs.

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

[LOGIC UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C5	4030016930	S.CER C1005 JB 1A 104K-T	B	92.3/31.0
C6	4030016930	S.CER C1005 JB 1A 104K-T	B	80.5/15.0
C7	4030016930	S.CER C1005 JB 1A 104K-T	B	75.5/16.7
C8	4030016930	S.CER C1005 JB 1A 104K-T	B	65.7/26.5
C9	4030016930	S.CER C1005 JB 1A 104K-T	B	65.3/32.0
C10	4030016930	S.CER C1005 JB 1A 104K-T	B	76.0/43.3
C11	4030016930	S.CER C1005 JB 1A 104K-T	B	81.0/43.3
C12	4030016930	S.CER C1005 JB 1A 104K-T	B	92.3/36.0
C13	4030017460	S.CER C1005 JB 1H 102K-T	B	70.5/15.7
C14	4030017460	S.CER C1005 JB 1H 102K-T	B	64.8/38.5
C15	4030017460	S.CER C1005 JB 1H 102K-T	B	87.7/44.3
C16	4030017460	S.CER C1005 JB 1H 102K-T	B	88.7/15.7
C17	4030016790	S.CER C1005 JB 1E 103K-T	B	93.3/31.0
C18	4030016790	S.CER C1005 JB 1E 103K-T	B	80.5/14.0
C19	4030016790	S.CER C1005 JB 1E 103K-T	B	64.7/26.5
C20	4030016790	S.CER C1005 JB 1E 103K-T	B	76.0/44.3
C24	4030017460	S.CER C1005 JB 1H 102K-T	B	67.0/45.2
C25	4030016930	S.CER C1005 JB 1A 104K-T	B	63.8/45.2
C26	4030020300	S.CER GRM21BB31C475KA87L	B	92.8/20.9
C27	4030016790	S.CER C1005 JB 1E 103K-T	B	94.2/20.4
C31	4030016950	S.CER C1005 JB 1A 473K-T	B	85.5/15.3
C32	4030016950	S.CER C1005 JB 1A 473K-T	B	84.5/16.3
C33	4030016950	S.CER C1005 JB 1A 473K-T	B	85.1/13.9
C35	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/23.2
C36	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/24.2
C37	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/25.2
C38	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/26.2
C43	4030017410	S.CER C1005 CH 1H 240J-T	B	94.3/28.5
C44	4030017410	S.CER C1005 CH 1H 240J-T	B	94.3/26.7
C57	4030016930	S.CER C1005 JB 1A 104K-T	B	87.3/48.5
C61	4030016790	S.CER C1005 JB 1E 103K-T	B	106.8/27.1
C62	4030017760	S.CER C1005 JB 1H 222K-T	B	39.3/41.3
C63	4030019990	S.CER C1005 JB 1C 104K-T	B	40.3/41.3
C64	4030016790	S.CER C1005 JB 1E 103K-T	B	37.0/40.4
C65	4030018890	S.CER C1005 JB 0J 224K-T	B	35.3/40.8
C66	4030017760	S.CER C1005 JB 1H 222K-T	B	30.5/50.8
C67	4030016930	S.CER C1005 JB 1A 104K-T	B	29.1/50.4
C68	4030016790	S.CER C1005 JB 1E 103K-T	B	32.8/51.8
C69	4340000310	S.MYL ECHU 1C 333JX5	B	38.2/50.7
C71	4030017920	S.CER C1005 JB 1A 683K-T	B	43.0/13.3
C72	4030017480	S.CER C1608 JB 1A 474K-T	B	41.4/11.2
C74	4030017460	S.CER C1005 JB 1H 102K-T	B	44.0/9.1
C81	4030016930	S.CER C1005 JB 1A 104K-T	B	37.6/33.6
C82	4030017460	S.CER C1005 JB 1H 102K-T	B	39.2/30.0
C83	4030019990	S.CER C1005 JB 1C 104K-T	B	34.0/33.1
C84	4030017460	S.CER C1005 JB 1H 102K-T	B	33.6/34.1
C85	4030020300	S.CER GRM21BB31C475KA87L	B	38.8/8.8
C86	4030017460	S.CER C1005 JB 1H 102K-T	B	40.3/8.9
C87	4030016790	S.CER C1005 JB 1E 103K-T	B	38.4/11.6
C88	4030020240	S.CER GRM31CR11C475KA01L	B	36.8/10.5
C89	4030017460	S.CER C1005 JB 1H 102K-T	B	41.5/33.8
C91	4030016930	S.CER C1005 JB 1A 104K-T	B	56.4/13.8
C92	4030017460	S.CER C1005 JB 1H 102K-T	B	57.1/20.0
C95	4030016790	S.CER C1005 JB 1E 103K-T	B	49.5/40.8
C96	4030016930	S.CER C1005 JB 1A 104K-T	B	55.5/34.8
C101	4030017460	S.CER C1005 JB 1H 102K-T	B	120.2/36.9
C102	4030016930	S.CER C1005 JB 1A 104K-T	B	121.2/36.9
C103	4030016790	S.CER C1005 JB 1E 103K-T	B	122.2/36.9
C104	4030017920	S.CER C1005 JB 1A 683K-T	B	131.4/32.0
C105	4030017460	S.CER C1005 JB 1H 102K-T	B	131.4/30.0
C106	4030017460	S.CER C1005 JB 1H 102K-T	B	128.2/30.6
C107	4030016930	S.CER C1005 JB 1A 104K-T	B	136.9/34.6
C108	4030017460	S.CER C1005 JB 1H 102K-T	B	134.5/27.9
C111	4030016790	S.CER C1005 JB 1E 103K-T	B	45.8/26.5
C112	4030020310	S.CER GRM31CB31C106KA88L	B	44.6/29.6
C113	4030016790	S.CER C1005 JB 1E 103K-T	B	26.3/19.4
C114	4030017460	S.CER C1005 JB 1H 102K-T	B	27.3/19.4
C115	4030017460	S.CER C1005 JB 1H 102K-T	B	24.1/26.2
C116	4030017460	S.CER C1005 JB 1H 102K-T	B	23.2/22.1
C155	4030016790	S.CER C1005 JB 1E 103K-T	B	27.7/26.9
C162	4030016930	S.CER C1005 JB 1A 104K-T	B	7.2/16.3
C165	4030017460	S.CER C1005 JB 1H 102K-T	B	16.2/15.3
C166	4030017460	S.CER C1005 JB 1H 102K-T	B	16.2/16.3
J1	6510022472	S.CON 40FLT-SM2-TB(LF)(SN)(M)	B	35.0/23.0
J4	6510018971	S.CON B4B-PH-SM4-TB(LF)(SN)	B	127.0/22.5
EP11	6910016330	S.BEA MMZ1005S 601CT-S	B	129.6/31.0

[CONNECT UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C1	4030016790	S.CER C1005 JB 1E 103K-T	B	2.1/11.9
J1	6510022440	CON LTW-8MP-C NUTGASKET <LIA>		
J2	6510025142	S.CON 10FLT-SM2-TB(LF)(SN)(M)	B	4.3/15.0
EP2	6910019100	S.BEA MPZ1608S101AT	B	4.5/19.1

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[VCO UNIT]

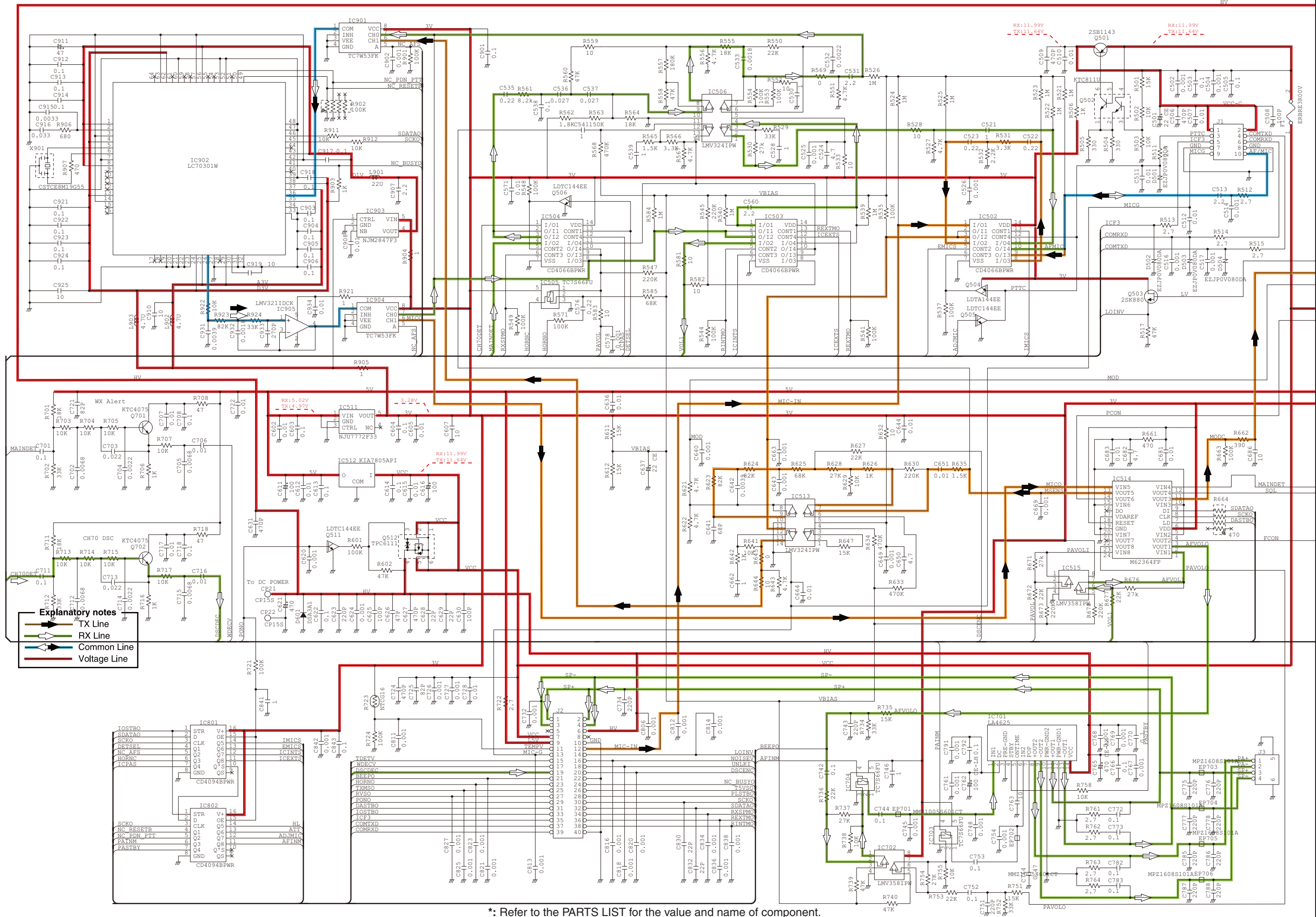
REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
Q2	1590004070	S.TRA LDTC144EET1G <SLVJ>	T	13.4/9.3
Q3	1530002921	S.TRA 2SC4226-T1 Y25 (R25)	T	11.9/2.8
Q4	1530002921	S.TRA 2SC4226-T1 Y25 (R25)	T	18.6/2.3
Q5	1530003950	S.TRA KTC4080 Y-RTK/P	T	7.1/6.9
Q6	1530003950	S.TRA KTC4080 Y-RTK/P	T	4.9/2.6
Q7	1530003950	S.TRA KTC4080 Y-RTK/P	T	5.4/11.3
Q8	1590004050	S.TRA LDTA144EET1G <SLVJ>	T	11.4/12.5
D1	1750001790	S.DIO 1SS390	T	11.5/10.0
D2	1750001790	S.DIO 1SS390	T	13.3/7.7
D3	1750001780	S.VAR HVB350BYPTL-E	T	14.4/5.6
L1	6200003711	S.COI NLV25T-2R7J	T	18.2/9.2
L2	6200011410	S.COI C2520C-82NG-A	T	17.9/5.9
L3	6200013750	S.COI MLK1005SR10JT	T	5.7/8.3
L4	6200013750	S.COI MLK1005SR10JT	T	3.5/4.0
L5	6200013750	S.COI MLK1005SR10JT	T	4.0/12.7
R6	7030009320	S.RES ERJ2GEJ 4R7 X (4.7)	T	7.5/10.8
R7	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	16.4/11.0
R8	7030005240	S.RES ERJ2GEJ 473 X (47K)	T	16.2/9.8
R9	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	16.2/8.9
R11	7030005000	S.RES ERJ2GEJ 471 X (470)	T	10.0/12.0
R12	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	18.5/13.7
R13	7030007340	S.RES ERJ2GEJ 153 X (15K)	T	15.5/13.3
R14	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	18.5/12.8
R15	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	13.4/12.8
R16	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	9.4/13.2
R21	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	9.9/1.4
R22	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	20.7/1.7
R23	7030009160	S.RES ERJ2GEJ 181 X (180)	T	15.6/2.2
R25	7030008370	S.RES ERJ2GEJ 561 X (560)	T	9.9/3.2
R26	7030005010	S.RES ERJ2GEJ 681 X (680)	T	6.9/9.6
R27	7030005070	S.RES ERJ2GEJ 683 X (68K)	T	7.6/5.1
R31	7030005000	S.RES ERJ2GEJ 471 X (470)	T	4.3/5.6
R32	7030005070	S.RES ERJ2GEJ 683 X (68K)	T	6.8/1.7
R33	7030007270	S.RES ERJ2GEJ 151 X (150)	T	2.9/5.3
R34	7030009200	S.RES ERJ2GEJ 390 X (39)	T	1.8/4.4
R41	7030005000	S.RES ERJ2GEJ 471 X (470)	T	3.5/9.5
R42	7030007350	S.RES ERJ2GEJ 393 X (39K)	T	5.1/9.5
R43	7030003860	S.RES ERJ3GE JPW V	T	16.1/3.7
C4	4030017460	S.CER C1005 JB 1H 102K-T	T	18.3/11.3
C6	4030016790	S.CER C1005 JB 1E 103K-T	T	3.5/7.5
C8	4030017460	S.CER C1005 JB 1H 102K-T	T	15.2/10.8
C9	4030017460	S.CER C1005 JB 1H 102K-T	T	15.0/9.5
C11	4030017460	S.CER C1005 JB 1H 102K-T	T	12.8/10.8
C12	4030017460	S.CER C1005 JB 1H 102K-T	T	14.0/11.3
C13	4030018860	S.CER C1005 JB 0J 105K-T	T	13.4/13.7
C14	4030017460	S.CER C1005 JB 1H 102K-T	T	14.6/13.3
C15	4030017460	S.CER C1005 JB 1H 102K-T	T	17.3/13.3
C16	4030011810	S.CER C1608 JB 1A 224K-T	T	10.3/9.9
C21	4030018010	S.CER C1005 CH 1H 360J-T	T	16.2/8.0
C22	4030017670	S.CER C1005 CH 1H 390J-T	T	15.0/7.6
C24	4030017760	S.CER C1005 JB 1H 222K-T	T	11.6/7.0
C31	4030017350	S.CER C1005 CH 1H 020B-T	T	12.2/4.7
C32	4030017550	S.CER C1005 CH 1H 1R5B-T	T	20.4/3.3
C33	4030017440	S.CER C1005 CH 1H 221J-T	T	15.6/1.3
C34	4030017460	S.CER C1005 JB 1H 102K-T	T	9.9/4.1
C35	4030006860	S.CER C1608 JB 1H 102K-T	T	14.1/2.7
C36	4030017340	S.CER C1005 CH 1H 010B-T	T	9.9/2.3
C37	4030017460	S.CER C1005 JB 1H 102K-T	T	7.0/8.7
C41	4030017380	S.CER C1005 CH 1H 050B-T	T	6.8/3.3
C42	4030017460	S.CER C1005 JB 1H 102K-T	T	4.8/4.4
C43	4030017400	S.CER C1005 CH 1H 220J-T	T	2.5/3.1
C46	4030017630	S.CER C1005 CH 1H 120J-T	T	4.8/8.3
C47	4030017460	S.CER C1005 JB 1H 102K-T	T	3.5/8.4
C48	4030017460	S.CER C1005 JB 1H 102K-T	T	5.4/13.1
C49	4030017650	S.CER C1005 CH 1H 270J-T	T	3.3/11.3
J1	6910003831	CON IMSA-9230B-1-04Z003-PT1		
J2	6910003831	CON IMSA-9230B-1-04Z003-PT1		

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S.=Surface mount

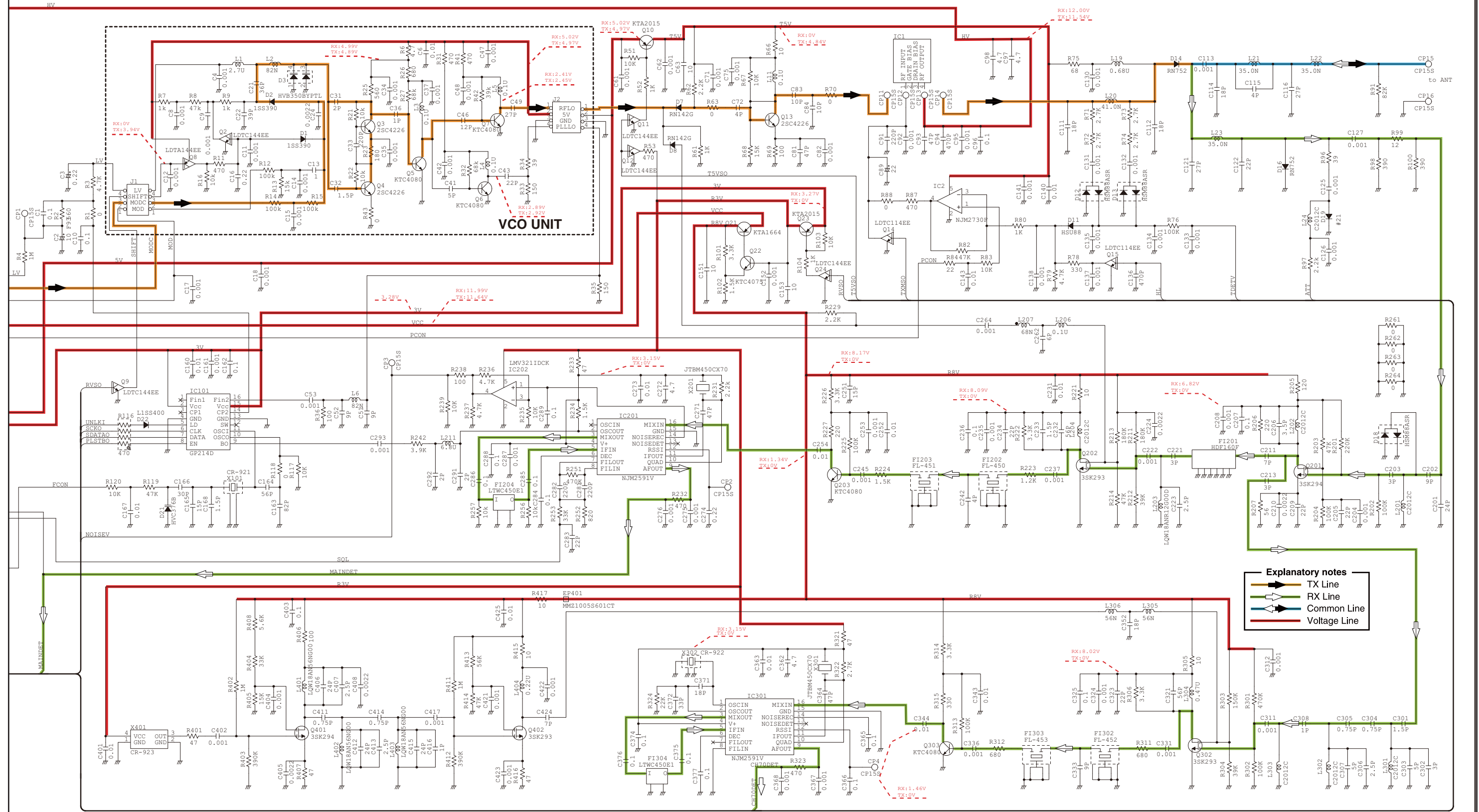
VOLTAGE DIAGRAM

• MAIN UNIT (1/2)



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

• MAIN UNIT (2/2)



Explanatory notes

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

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



SERVICE MANUAL

VHF MARINE TRANSCEIVER
IC-M400BB

S-14915XZ-C1
January 2013

INTRODUCTION

This service manual describes the latest technical information for the **IC-M400BB** VHF MARINE TRANSCEIVER, at the time of publication.

MODEL	VERSION	SUPPLIED MICROPHONE
IC-M400BB	USA	-
	UK	
	EUR	
	HOL	
	FRG	
	USA-01	HM-195B
	UK-01	
	EUR-01	
	HOL-01	
	FRG-01	
	USA-02	HM-195SW
	EUR-02	

CAUTION

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

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.

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



ORDERING PARTS

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

1. 10-digit Icom part number
2. Component name
3. Equipment model name and unit name
4. Quantity required

<ORDER EXAMPLE>

1110003491 S.IC TA31136FNG IC-M400BB MAIN UNIT 5 pieces
8820001210 Screw 2438 screw IC-M400BB Top cover 10 pieces

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

REPAIR NOTES

1. Make sure that the 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 Standard 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 the test equipment thoroughly before connecting it to the transceiver.

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■ GENERAL

- Frequency coverage
 - European versions : Tx 156.000–161.450 MHz
Rx 156.000–163.425 MHz
 - USA versions : Tx 156.025–157.425 MHz
Rx 156.050–163.275 MHz
 - CH70 RX : 156.525 MHz
- Intermediate frequencies
 - MAIN : 1st 21.700 MHz, 2nd 450 kHz
 - CH70 : 1st 30.875 MHz, 2nd 450 kHz
- Mode : FM (16K0G3E), DSC (16K0G2B)
- Channel spacing : 25 kHz
- Operating temperature range : –20°C to +60°C; –4°F to +140°F
- Current drain (at 13.8 V) : TX high (25 W) 5.5 A maximum
Maximum audio 3.5 A maximum
- Power supply requirement
 - European versions : 13.8 V DC nominal (negative ground) (Operatable range: 10.8–15.6 V)
 - USA versions : 13.8 V DC nominal (negative ground) (Operatable range: 11.7–15.9 V)
- Frequency stability : ±1.5 kHz (–20°C to +60°C)
- Antenna impedance : 50 Ω nominal
- Dimensions (approximately) : 216(W) × 79(H) × 125(D) mm ; 8.5(W) × 3.1(H) × 4.9(D) inches (Projections not included)
- Weight (approximately) : 830 g; 29 oz

■ TRANSMITTER

- Output power : 25 W/1 W
- Modulation system : Variable reactance frequency modulation
- Maximum frequency deviation : ±5 kHz
- Frequency error
 - European versions : Less than ±1.5 kHz
 - USA versions : ±10 ppm
- Adjacent channel power : More than 70 dB
- Spurious emissions
 - European versions : Less than 0.25 μW
 - USA versions : Less than –70 dBc (High), Less than –56 dBc (Low)
- Audio harmonic distortion : Less than 10% (at 60% distortion)
- Residual modulation : More than 40 dB
- Audio frequency response
 - European versions : +1 dB to –3 dB of 6 dB octave (from 300–3000 Hz)
 - USA versions : +1 dB to –3 dB of 6 dB octave (from 300–2500 Hz)

■ RECEIVER (MAIN)

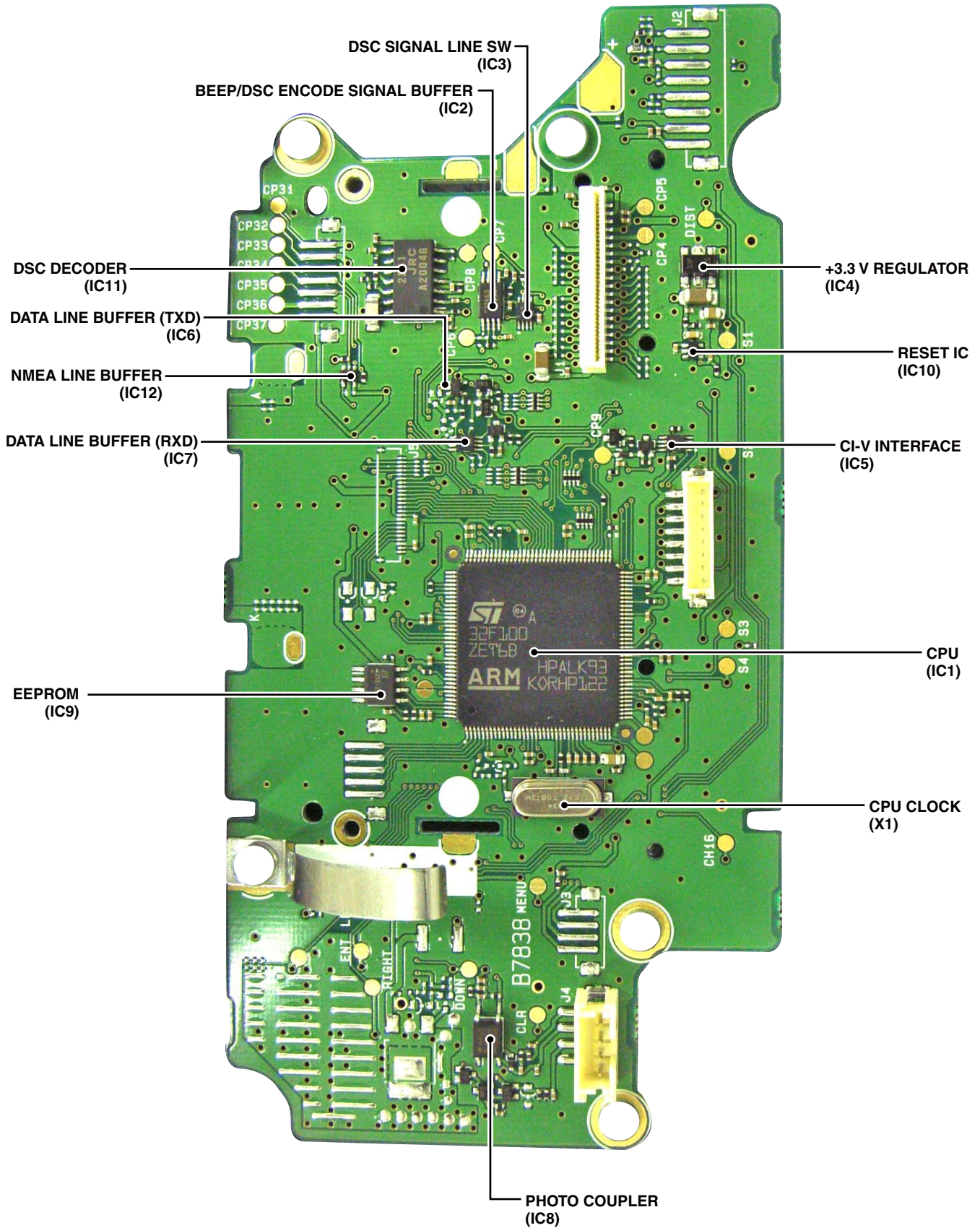
- Receive system : Double conversion superheterodyne
- Sensitivity
 - European versions (20 dB SINAD) : –5 dBμ emf (typical)
 - USA versions (12 dB SINAD) : –13 dBμ (typical)
- Squelch sensitivity
 - European versions : Less than –2 dBμ emf
 - USA versions : Less than –10 dBμ
- Intermodulation rejection ratio
 - European versions : More than 68 dB
 - USA versions : More than 70 dB
- Hum and noise : More than 40 dB
- Spurious response rejection ratio : More than 70 dB
- Adjacent channel selectivity : More than 70 dB
- Audio frequency response : +1 dB to –3 dB of 6 dB octave (from 300–3000 Hz)
- Audio output power (at 10% distortion with a 4 Ω load)
 - External speaker : More than 10 W
 - HM-195 : More than 2 W

■ RECEIVER (CH70)

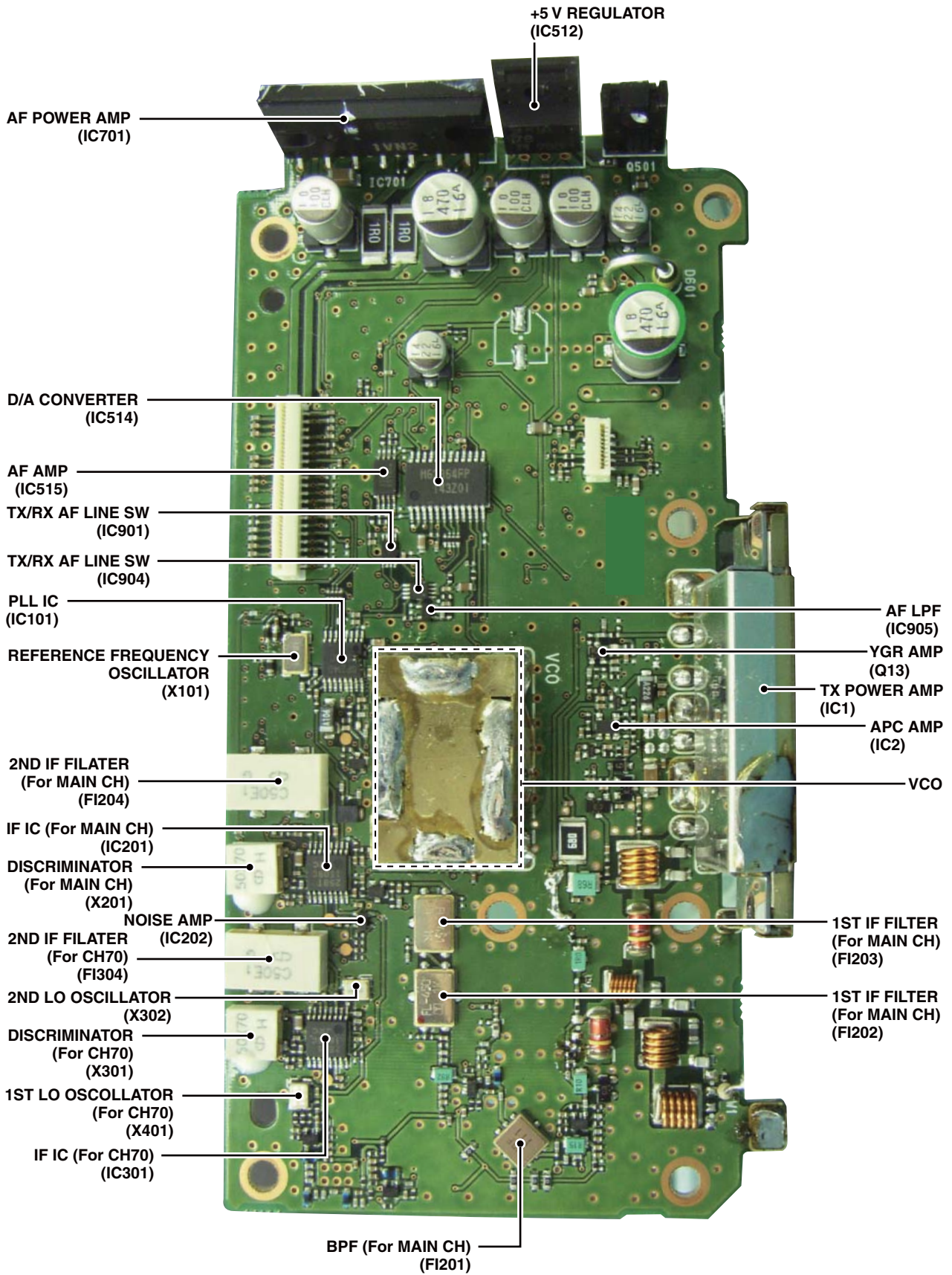
- Sensitivity (at 1% BER)
 - European versions : –4 dBμ emf (typical)
 - USA versions : –5 dBμ (typical)
- Intermodulation rejection ratio : More than 68 dB (at 1% BER)
- Spurious response rejection ratio : More than 73 dB (at 1% BER)
- Adjacent channel selectivity : More than 73 dB (at 1% BER)

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

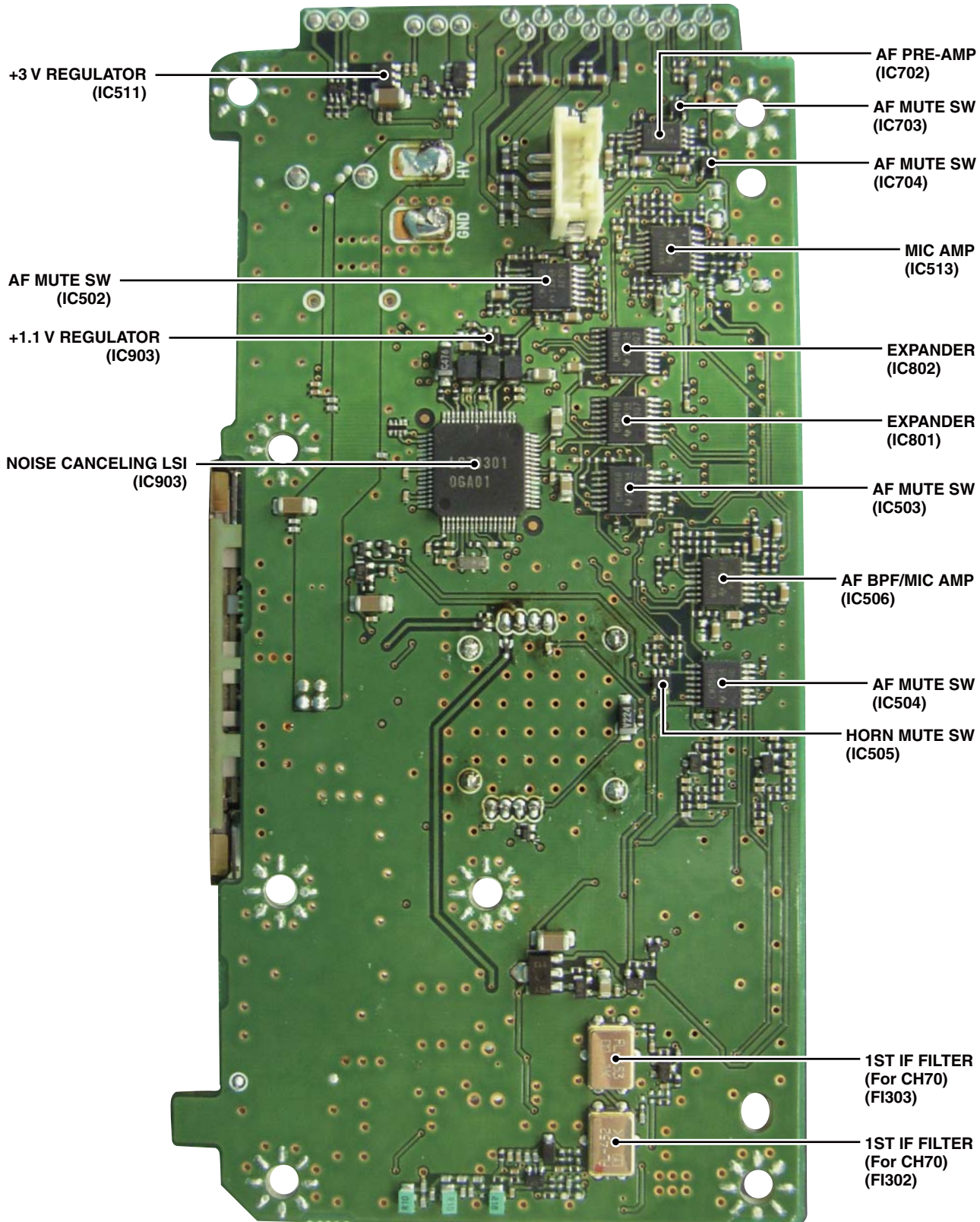
• LOGIC UNIT



• MAIN UNIT
(TOP VIEW)



• MAIN UNIT
(BOTTOM VIEW)

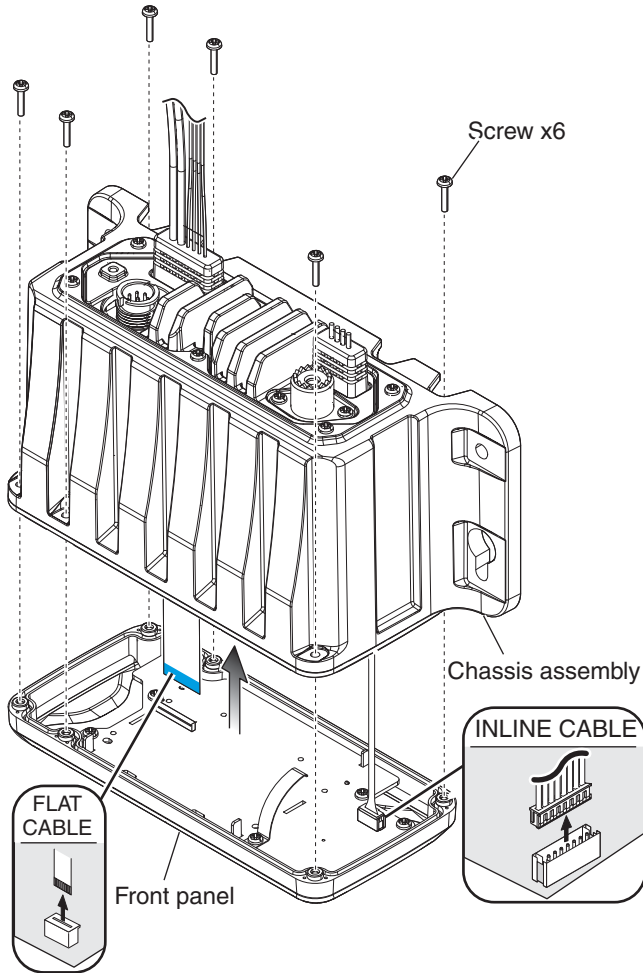


SECTION 3 DISASSEMBLY INSTRUCTION

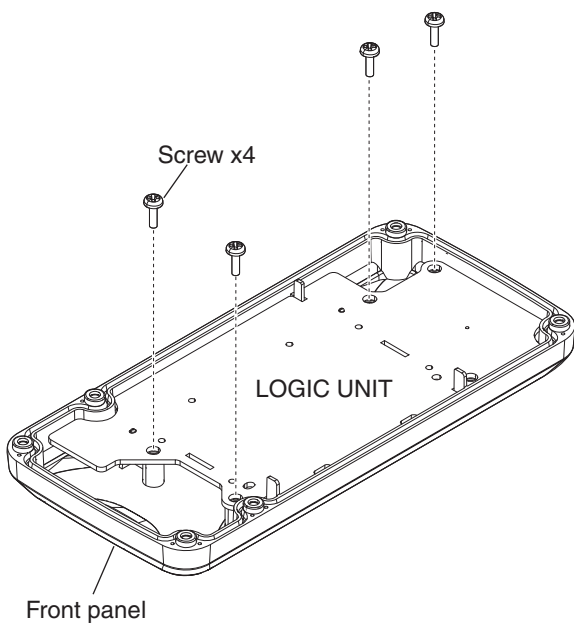
1. Removing the FRONT UNIT

- 1) Remove 6 screws from the rear.
- 2) Disconnect the flat cable and inline cable from the LOGIC UNIT.
- 3) Separate the front panel from the chassis assembly.

BE CAREFUL about the **flat cable** and **connector** when separating the front panel from the chassis assembly.

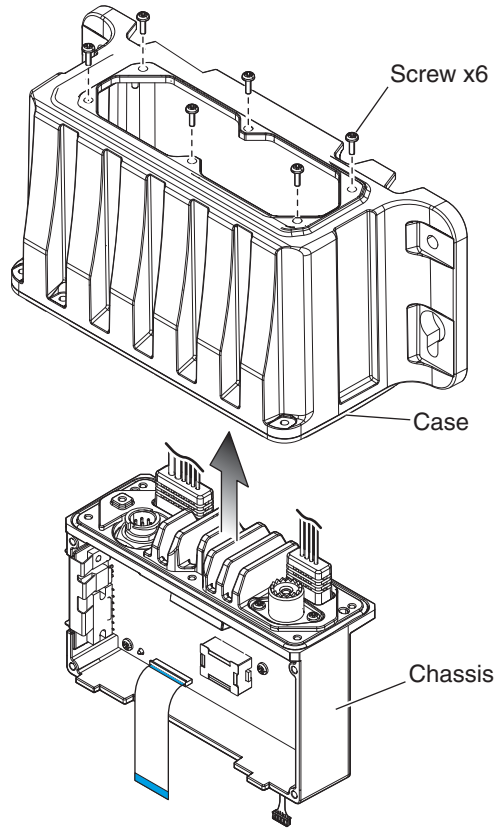


- 4) Remove 4 screws from the LOGIC UNIT.
- 5) Remove the LOGIC UNIT.

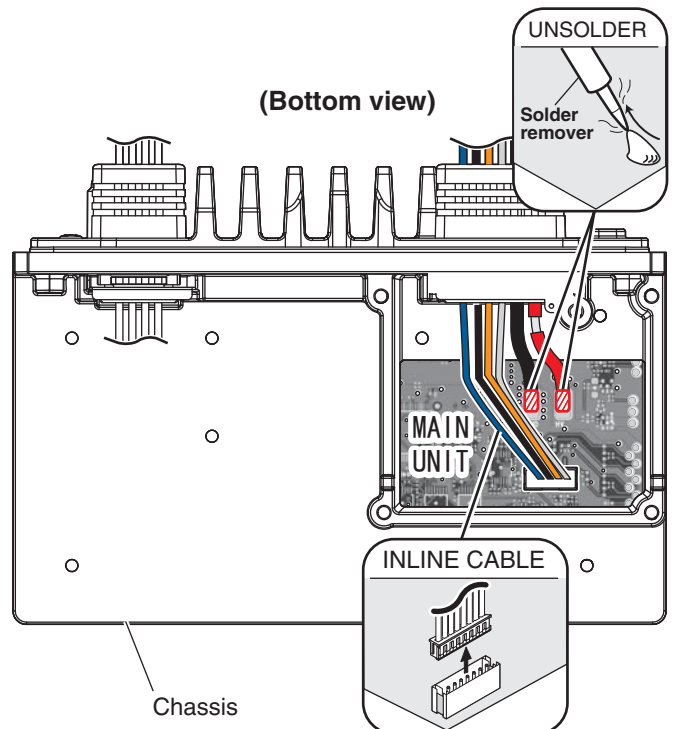


2. Removing the MAIN UNIT

- 1) Remove 6 screws from the rear.
- 2) Remove the case from the chassis.



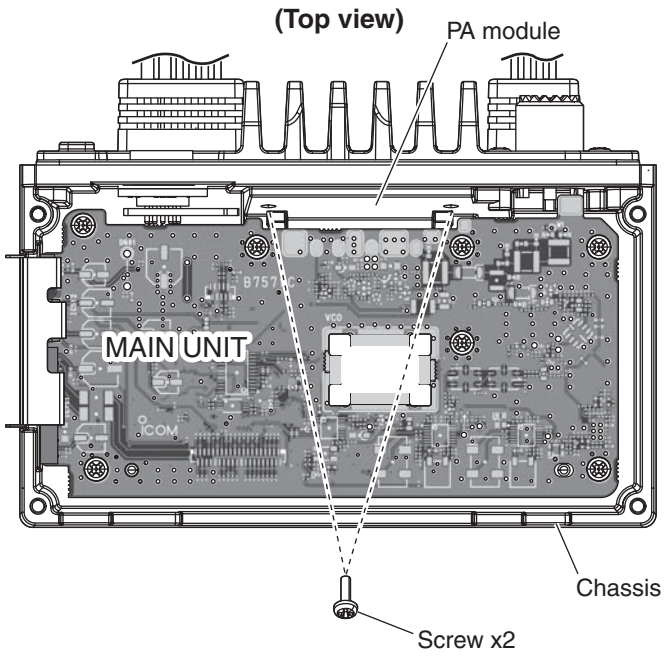
- 3) Disconnect the inline cable from the bottom of MAIN UNIT.
- 4) Unsolder 2 points at the power supply cable.



(Continued on next page.)

2. Removing the MAIN UNIT (Continued)

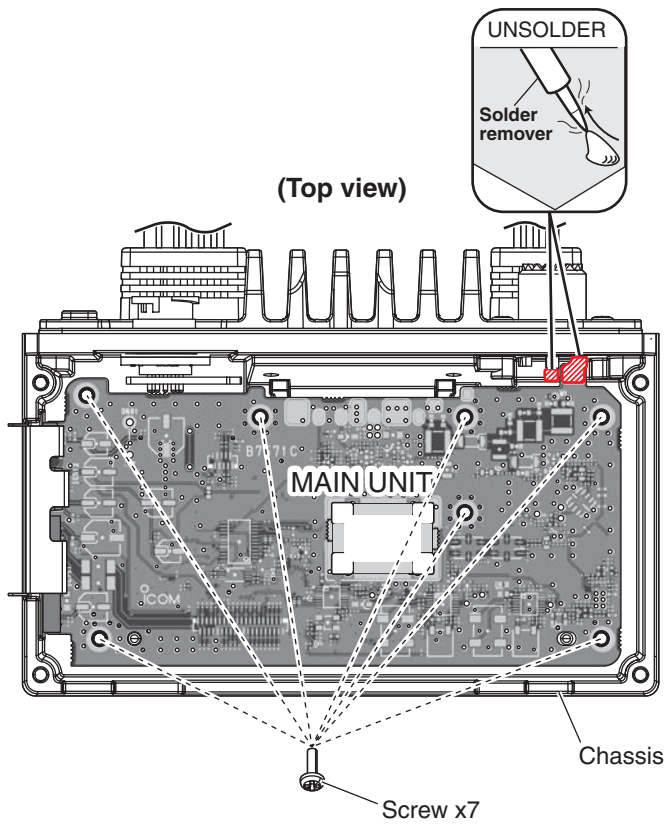
5) Remove 2 screws from the PA module.



6) Remove 7 screws from the top of MAIN UNIT.

7) Unsolder 2 points at the antenna connector.

8) Remove the MAIN UNIT from the chassis.



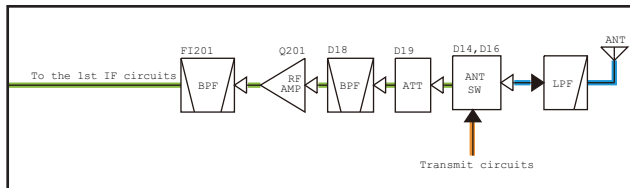
4-1 RECEIVE CIRCUITS

RF CIRCUIT (MAIN UNIT)

The RX signal from the antenna is passed through the LPF (L21, L22, and C114–C116), ANT SW (D16), attenuator (D19, R96) and BPF (L201, C201 and C202), and then applied to the RF AMP (Q201).

The amplified signal is divided and applied to the 1st IF circuits for MAIN CH or CH70, through another BPF (FI201: for MAIN CH; L301–L303 and C302–C308: for CH70).

• RF CIRCUIT

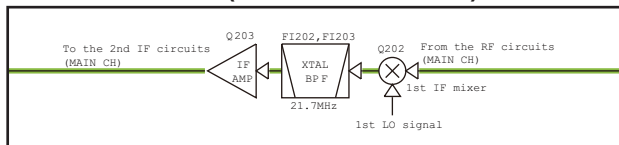


1ST IF CIRCUIT FOR MAIN CHANNELS (MAIN UNIT)

The RX signal from the RF circuits is applied to the 1st IF mixer (Q202), and mixed with the 1st LO signal from the VCO (Q3, Q4 and D1–D3), resulting in a 21.7 MHz 1st IF signal.

The 1st IF signal is filtered by the 1st IF filter (FI202 and FI203), and then applied to the 1st IF AMP (Q203). The amplified signal is applied to the 2nd IF circuits.

• 1ST IF CIRCUIT (For main channels)



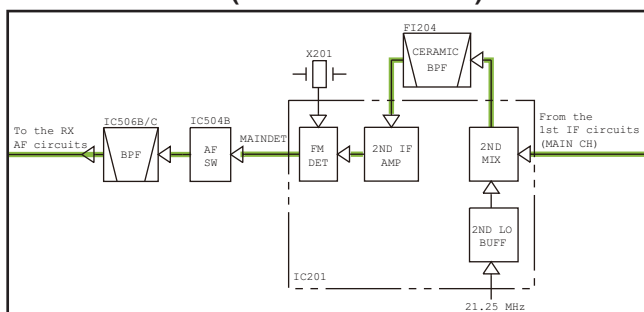
2ND IF CIRCUIT FOR MAIN CHANNELS (MAIN UNIT)

The 1st IF signal from the 1st IF circuits is applied to the IF IC (IC201, pin 16). The IF IC contains the 2nd IF mixer, 2nd IF AMP, detector, and so on, in its package.

The 1st IF signal is mixed with the 21.25 MHz 2nd LO signal from the reference frequency oscillator (TCXO: X101), resulting in a 450 kHz 2nd IF signal. The 2nd IF signal is passed through the 2nd IF filter (FI204) to remove sideband noise. The filtered signal is amplified by the 2nd IF AMP, and demodulated by the quadrature detector with discriminator (X201).

The demodulated AF signal is applied to the RX AF circuits, through the AF SW (IC504B, pins 4, 3).

• 2ND IF CIRCUIT (For main channels)

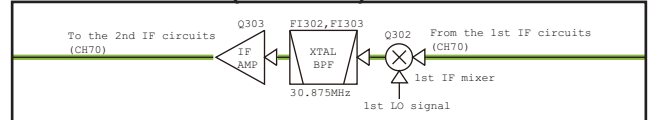


1ST IF CIRCUIT FOR CH70 (MAIN UNIT)

The RX signal from the RF circuits is applied to the 1st IF mixer (Q302), and mixed with the 125.649 MHz 1st LO signal which is generated by the TCXO (X401) and tripled by the BPF (L402, L403 and C412–C416), resulting in a 30.875 MHz 1st IF signal.

The 1st IF signal is filtered by the 1st IF filters (FI302 and FI303), and then applied to the 1st IF AMP (Q303). The amplified signal is applied to the 2nd IF circuits.

• 1ST IF CIRCUIT (For CH70)



2ND IF CIRCUIT FOR CH70 (MAIN and LOGIC UNITS)

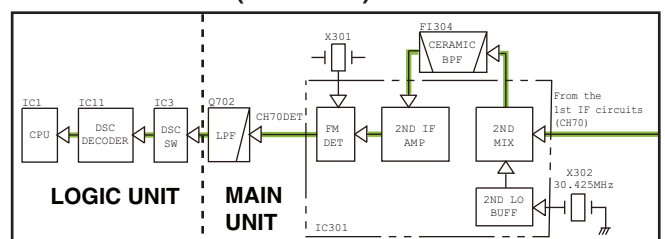
The 1st IF signal from the 1st IF circuits is applied to the IF IC (IC301, pin 16). The IF IC contains the 2nd IF mixer, 2nd IF AMP, detector, and so on, in its package.

The 1st IF signal is mixed with the 30.425 MHz 2nd LO signal which is generated by 2nd LO oscillator (X302), resulting in a 450 kHz 2nd IF signal. The 2nd IF signal is passed through the 2nd IF filter (FI304) to remove sideband noise. The filtered signal is amplified by the 2nd IF AMP, and demodulated by the quadrature detector with discriminator (X301).

The demodulated AF (FSK; Frequency Shift Keying) signal is applied to the DSC decoder (LOGIC UNIT: IC11, pin 2) which converts the sub audible tone signal into serial data, through the LPF (Q702) and DSC SW (LOGIC UNIT: IC3, pins 7, 1).

The serial data is applied to the CPU (LOGIC UNIT: IC1, pin 103) to control the transceiver (emergency alarm, DSC indication and so on.).

• 2ND IF CIRCUIT (For CH70)



RX AF CIRCUIT (MAIN UNIT)

The demodulated AF signal from the AF SW (IC504B) is passed through the BPF (IC506B, IC506C) and AF SW (IC901, pins 7, 1), and then applied to the noise canceller IC (IC902, pin 36).

The processed AF signal is output from pin 25, and then passed through the LPF (IC905, pins 1, 4) and AF SW (IC904, pins 1, 7).

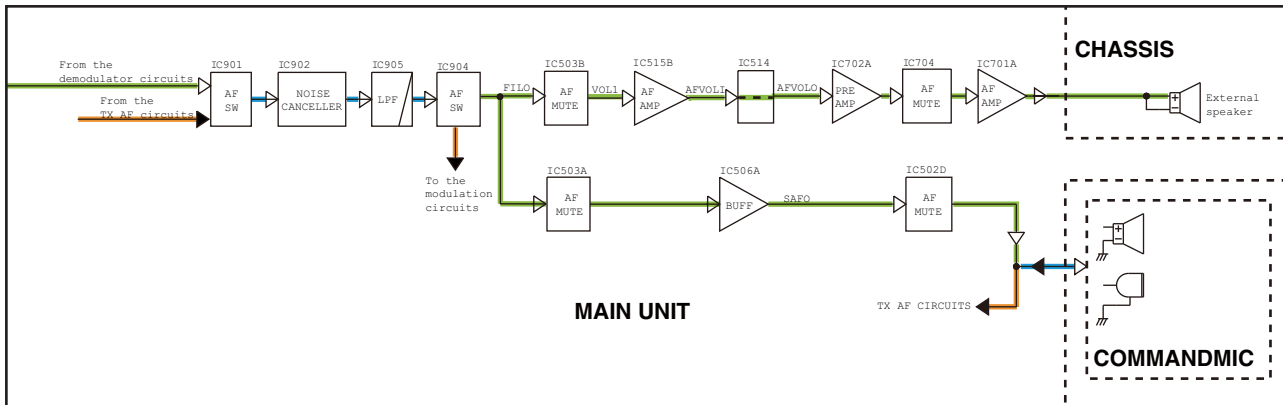
•When the AF signal is output to the optional COM-MANDMICIV™

The RX AF signal from the AF SW (IC904, pins 1, 7) is passed through the AF MUTE SW (IC503A, pins 2, 1) and amplified by the buffer (IC506A), and then output to the COMMANDMICIV™, through the AF mute SW (IC502D, 11, 10).

•When the AF signal is output to the external speaker

The RX AF signal from the AF SW (IC904, pins 1, 7) is passed through the AF MUTE SW (IC503A, pins 2, 1) and amplified by the buffer (IC506A), and then output to the external speaker, through the AF mute SW (IC502D, 11, 10).

• RX AF CIRCUIT

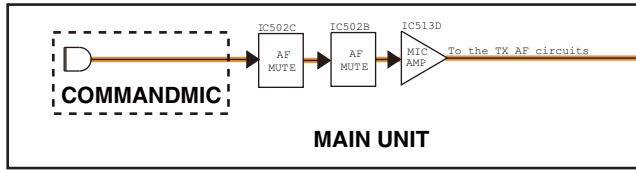


4-2 TRANSMIT CIRCUITS

TX AF CIRCUIT (MAIN UNIT)

The AF signal from the COMMANDMICIV™ is passed through the MIC mute SWs (IC502C, pins 9, 8 and IC502B, pins 4, 3), and then applied to the MIC AMP (IC513D).

• MIC AMP CIRCUITS



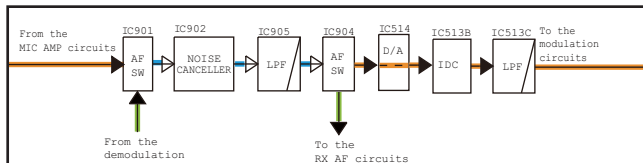
TX AF CIRCUIT (MAIN UNIT)

The amplified AF signal is passed through the AF SW (IC901, pins 6, 1) and applied to the noise canceller IC (IC902, pin 36).

The processed AF signal is output from pin 26, and then passed through the LPF (IC905, pins 1, 4) and AF SW (IC904, pins 1, 6), and then applied to the D/A converter (IC514, pins 13, 14) to be adjusted in level.

The level-adjusted AF signal is applied to the IDC AMP (IC513B) which limits the amplitude of MIC signal to prevent over deviation. The amplitude-limited signal is passed through the LPF (IC513C), and then applied to the modulation circuits on the VCO UNIT.

• TX AF CIRCUIT

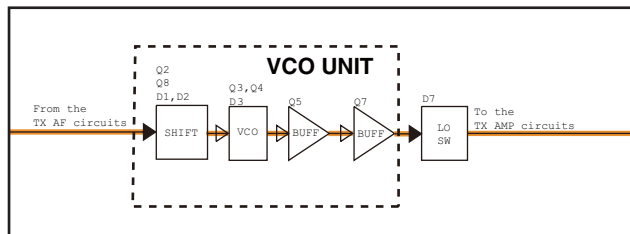


MODULATION CIRCUIT (VCO UNIT)

The MIC signal from the TX AF circuits is applied to the VCO (Q3, Q4 and D1–D3). The modulation signal is applied to D2, to obtain Frequency Modulation.

The modulated VCO output signal is passed through the buffers (Q5 and Q7), and then applied to the TX AMP circuits as a TX signal, through the LO SW (MAIN UNIT: D7).

• MODULATION CIRCUIT



TX AMP CIRCUIT (MAIN UNIT)

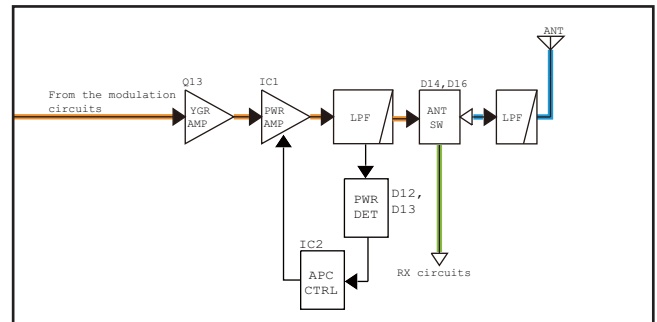
The TX signal is amplified by the YGR (Q13) and power AMP (IC1), and then passed through the LPF (L20, C111 and C112), TX output power detector (D12 and D13), ANT SW (D14), and two LPF (L21, L22, and C114–C116), before being sent to the antenna.

APC CIRCUIT (MAIN UNIT)

The voltage produced at the LPF (L20, C111, and C112) is rectified by D12 and D13, and is used as the TX power sensing voltage.

The voltage is applied to the APC AMP (IC2, pin 3), and the output voltage controls the gate bias voltage of power AMP (IC1) to keep the TX output power constant.

• TX AMP CIRCUIT



4-3 FREQUENCY SYNTHESIZER

• VCO (VCO UNIT)

The VCO (Q3, Q4, and D1–D3) generates both 1st LO signal for MAIN channels and the TX signal. The output of buffer (Q7) is used as the TX or RX LO signal.

While receiving, the LO signal is applied to the 1st IF mixer for MAIN channels (MAIN UNIT: Q202), through the LO SW (MAIN UNIT: D8) and LPF (MAIN UNIT: L206, L207 and C262).

While transmitting, the LO signal is applied to the TX AMP circuits, through the LO SW (MAIN UNIT: D7).

• PLL (MAIN UNIT)

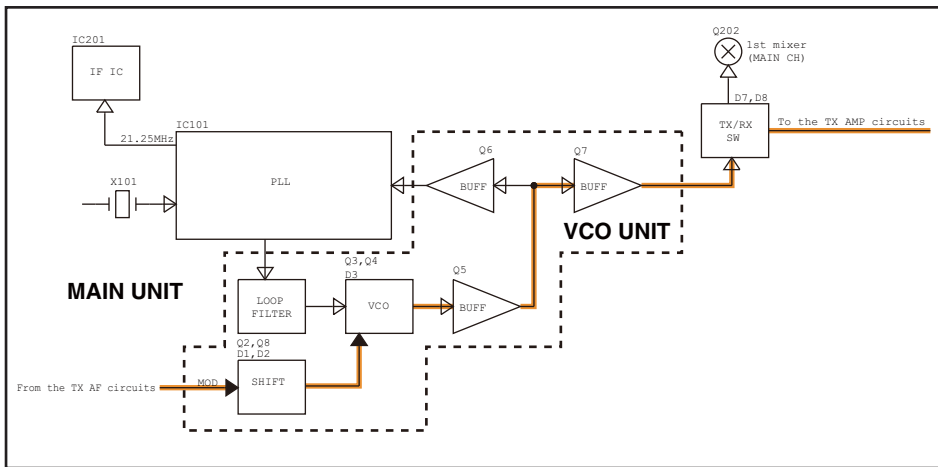
A portion of VCO output signal is passed through two buffers (VCO UNIT: Q5 and Q6), and then fed back to the PLL IC (IC101, pin 16).

The PLL IC (IC101) phase-compares the outputs of the reference frequency oscillator (TCXO; X101) and VCO, and the phase-difference is output as the charge pump current.

The current is passed through the loop filter (R1–R3, C1–C3, and C10) to be converted into the lock voltage, which controls the oscillating frequency of VCO.

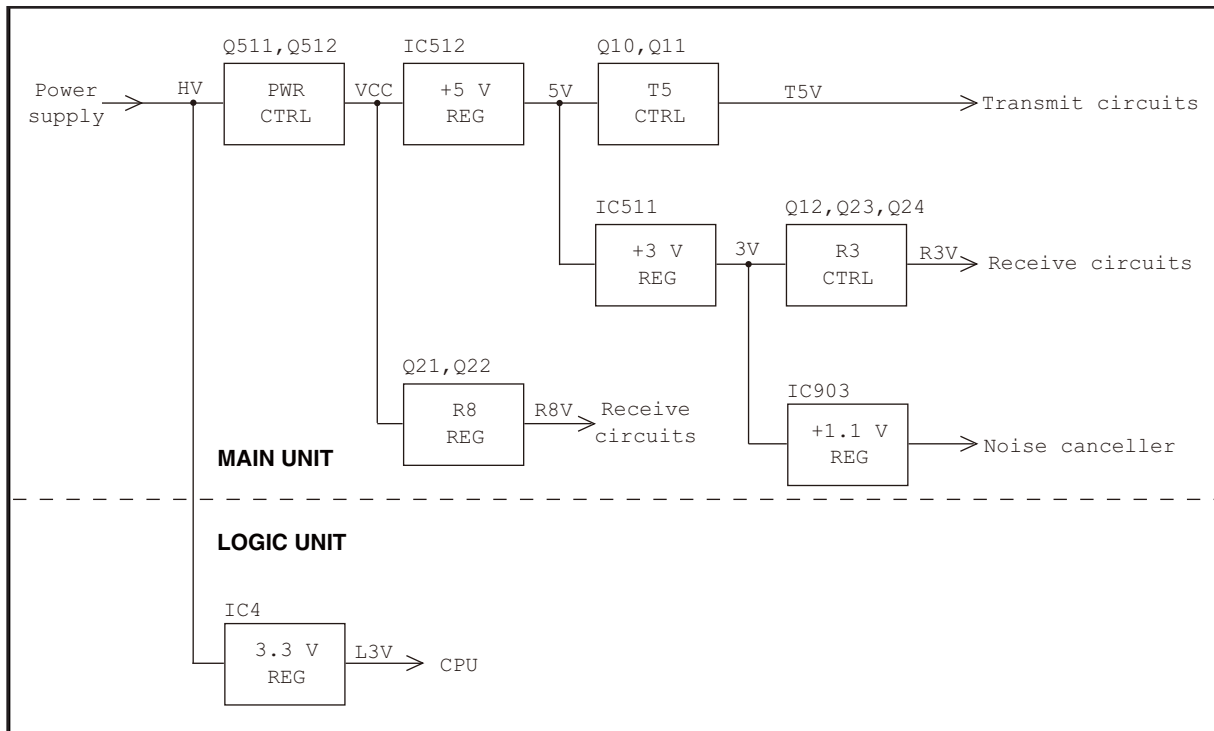
When the oscillation frequency drifts, its phase changes from that of the reference frequency, causing a lock voltage change to compensate for the drift in the VCO oscillating frequency.

• FREQUENCY SYNTHESIZER CIRCUIT



4-4 VOLTAGE BLOCK DIAGRAM

Voltage from the power supply is routed throughout the transceiver, through regulators and switches.



4-5 PORT ALLOCATIONS

• CPU (LOGIC UNIT: IC1)

PIN No.	LINE NAME	DESCRIPTION	I/O
26	TEMPV	Temperature sensing voltage.	I
27	TDETV	Transmit output power sensing voltage.	I
28	LOINV	Lock voltage input.	I
29	WDECV	Weather alert signal detect.	I
40	DSCOUT	DSC signal encoding output.	O
41	BEEP	Beep audio. (Square waves)	O
44	NOISEV	Noise level detect.	I
46	LBAT	Power supply voltage.	I
58	SDATA	Common serial data.	I
59	SCK	Common serial clock.	I
63	DASTB	D/A converter (MAIN UNIT: IC514) strobe.	I
64	PLSTB	PLL (MAIN UNIT: IC101) strobe.	I
65	IOSTB	Expander (MAIN UNIT: IC801 and IC802) strobe.	I
69	COM1TXD	Serial data to the COMMANDMICIV™.	O
70	COM1RXD	Serial data from the COMMANDMICIV™.	I
77	REXTM	RX AF mute switch (MAIN UNIT: IC504) control. (For COMMANDMICIV™) L=AF mute.	O
78	RXSPM	RX AF mute switch (MAIN UNIT: IC504) control. (For public address) L=AF mute.	O
101	NM1TXD	NMEA output.	O
102	NM1RXD	NMEA input.	I
103	DSCIN	Decoded DSC signal input.	I
113	CLOTXD	Cloning data.	O
114	DTEST	DSC loop back testing signal.	O
116	CLORXD	Cloning data.	I
117	PON	Power supply line VCC control. L=While the transceiver's power is ON.	O
135	UNLKI	PLL unlock detect. L=Unlocked.	I
136	DIMM	LCD brightness control.	O
141	ECK	EEPROM (LOGIC UNIT: IC9) serial clock.	O
142	EDATA	EEPROM (LOGIC UNIT: IC9) serial data.	I/O

• D/A CONVERTER (MAIN UNIT: IC514)

PIN No.	LINE NAME	DESCRIPTION
2	AFVOLO	AF output level adjustment. (RX signal)
3	FCON	Reference frequency adjustment.
11	SQL	Noise squelch level adjustment.
14	MSSENS	MIC sensitivity adjustment.
15	PCON	TX output power adjustment.
23	PAVOLO	AF output level adjustment. (Public address signal)

SECTION 5

PARTS LIST

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1150002470	IC RA33H1516M1-225		
IC2	1110006670	S.IC NJM2730F-TE1-#ZZZB	T	73.9/48.1
IC101	1130016080	S.IC GP214D <SEI>	T	65.9/16.0
IC201	1110007320	S.IC NJM2591V-TE1-#ZZZB	T	91.4/14.3
IC202	1110006490	S.IC LMV321IDCKR	T	97.0/18.6
IC301	1110007320	S.IC NJM2591V-TE1-#ZZZB	T	111.2/14.3
IC502	1130011770	S.IC CD4066BPWR	B	32.0/28.3
IC503	1130011770	S.IC CD4066BPWR	B	54.0/20.3
IC504	1130011770	S.IC CD4066BPWR	B	74.5/10.3
IC505	1130007021	S.IC TC7S66FU(TE85LF)	B	74.2/16.7
IC506	1110006470	S.IC LMV324IPWR	B	63.7/10.3
IC511	1180003480	S.REG NJU7772F33-TE1-#ZZZB	B	8.2/46.4
IC512	1180002781	REG KIA7805API-U/PF		
IC513	1110006470	S.IC LMV324IPWR	B	28.0/15.3
IC514	1190001350	S.IC M62364FP 600D	T	44.7/28.7
IC515	1110006740	S.IC LMV358IPWR	T	43.7/21.1
IC701	1110007900	IC LA4625-E		
IC702	1110006740	S.IC LMV358IPWR	B	15.5/16.2
IC703	1130007021	S.IC TC7S66FU(TE85LF)	B	12.0/14.3
IC704	1130007021	S.IC TC7S66FU(TE85LF)	B	18.2/11.0
IC801	1130011760	S.IC CD4094BPWR	B	46.5/20.3
IC802	1130011760	S.IC CD4094BPWR	B	39.0/20.3
IC901	1130009981	S.IC TC7W53FK(TE85LF)	T	52.5/21.5
IC902	1190003240	S.IC LC70301W-UIC-H	B	51.9/36.1
IC903	1180003820	S.REG NJM2847F3-011-TE1-#HZZH	B	37.7/34.9
IC904	1130009981	S.IC TC7W53FK(TE85LF)	T	57.5/25.3
IC905	1110006490	S.IC LMV321IDCKR	T	60.0/26.2
Q9	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	90.1/31.1
Q10	1510001090	S.TRA KTA2015Y-RTK/P	B	62.6/48.6
Q11	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	60.2/48.6
Q12	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	60.2/46.1
Q13	1530002881	S.TRA 2SC4226-T1 Y24 (R24)	T	65.1/46.9
Q14	1590004060	S.TRA LDTCL14EET1G <SLVJ>	T	71.0/49.3
Q15	1590004060	S.TRA LDTCL14EET1G <SLVJ>	T	76.8/46.1
Q21	1520000840	S.TRA KTA1664Y-RTF/P	B	105.0/29.6
Q22	1530003900	S.TRA KTC4075 BL-RTK/P	B	106.5/25.2
Q23	1510001090	S.TRA KTA2015Y-RTK/P	B	106.0/19.5
Q24	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	102.3/17.5
Q201	1580000751	S.FET 3SK294(TE85LF)	T	120.9/44.7
Q202	1580000731	S.FET 3SK293(TE85LF)	T	116.7/31.8
Q203	1530003950	S.TRA KTC4080 Y-RTK/P	T	93.6/20.3
Q302	1580000731	S.FET 3SK293(TE85LF)	B	127.1/30.0
Q303	1530003950	S.TRA KTC4080 Y-RTK/P	B	115.2/16.3
Q401	1580000751	S.FET 3SK294(TE85LF)	T	123.2/12.3
Q402	1580000731	S.FET 3SK293(TE85LF)	T	129.3/22.0
Q501	1520000380	TRA 2SB1143 S		
Q502	1590003800	S.TRA KTC811U-GR-RTK/P	B	9.7/51.7
Q503	1560000541	S.FET 2SK880-Y(T5RICOMF)	T	78.2/17.8
Q504	1590004050	S.TRA LDTA144EET1G <SLVJ>	B	28.4/23.7
Q505	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	28.1/26.4
Q506	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	78.3/10.8
Q511	1590004070	S.TRA LDTCL44EET1G <SLVJ>	B	9.7/41.4
Q512	1590004710	S.FET TPC6111(TE85LF)	B	8.2/38.2
Q701	1530003900	S.TRA KTC4075 BL-RTK/P	B	82.8/13.1
Q702	1530003900	S.TRA KTC4075 BL-RTK/P	B	82.8/5.4
D7	1750001910	S.DIO HVD144AKRF-E	B	68.2/35.7
D8	1750001910	S.DIO HVD144AKRF-E	B	70.7/33.2
D11	1750002880	S.DIO DB2J31000L	T	78.6/49.6
D12	1790000691	S.DIO HSM88ASRTR-E	T	81.2/50.3
D13	1790000691	S.DIO HSM88ASRTR-E	T	83.3/47.0
D14	1750002060	S.DIO RN752TE-21	T	98.0/51.7
D16	1750002060	S.DIO RN752TE-21	T	110.3/47.0
D18	1790000691	S.DIO HSM88ASRTR-E	T	116.8/47.7
D19	1750001910	S.DIO HVD144AKRF-E	T	104.1/45.1
	1750001910	S.DIO HVD144AKRF-E	[USA-01]	
	1750001910	S.DIO HVD144AKRF-E	[USA-02]	
D21	1750000771	S.VAR HVC376BTRF-E	T	62.8/5.2
D22	1750001810	S.DIO L1SS400T1G <SLVJ>	T	60.4/15.7
D501	1790001990	S.VAR EZJP0V080DA	T	43.5/43.4
D502	1790001990	S.VAR EZJP0V080DA	T	41.2/41.4
D503	1790001990	S.VAR EZJP0V080DA	T	39.6/52.6
D504	1790001990	S.VAR EZJP0V080DA	T	42.8/53.5
D601	1790000700	DIO DSA3A1		
FI201	2040002060	S.SAW HDF160F SMD-3 <SEI>	T	123.1/37.7
FI202	2030000930	S.MON 21L715A3(IMD) 21.7 MHz (FL-450)	T	106.1/27.3
FI203	2030000940	S.MON 21L715A3 21.7 MHz (FL-451)	T	97.3/27.3
FI204	2020002480	S.CER LTWC450E1 <JJE>	T	80.5/8.2
FI302	2030000950	S.MON 30L715A(IMD) 30.875 MHz (FL-452)	B	123.0/22.0
FI303	2030000960	S.MON 30L715A 30.875 MHz (FL-453)	B	113.8/22.0
FI304	2020002480	S.CER LTWC450E1 <JJE>	T	101.7/8.2
X101	6050013300	S.XTA CR-921(SX-5S3 21.25 MHz) <SKD>	T	65.0/10.1
X201	6070000310	S.DIS JTBM450CX70 <JJE>	T	90.8/5.6
X301	6070000310	S.DIS JTBM450CX70 <JJE>	T	110.4/5.6
X302	6050013310	S.XTA CR-922(SX-32S 30.425 MHz) <SKD>	T	105.3/17.8

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
X401	6050013280	S.XTA CR-923 DSB321SCL 41.883333 MHz	T	118.0/10.9
X901	6060000880	S.CER CSTCE8M19G55	B	61.6/36.7
L6	6200013760	S.COI MLK1005S82NJT	T	73.7/17.9
L11	6200013750	S.COI MLK1005SR10JT	T	64.4/49.0
L19	6200010770	S.COI C2520C-R68G-A	T	92.4/45.2
L20	6200014320	S.COI 0.80-3.0-5TR 41.0N <COMO>	T	90.3/51.7
L21	6200014330	S.COI 0.80-2.7-5TR 35.0N <COMO>	T	111.3/54.2
L22	6200014330	S.COI 0.80-2.7-5TR 35.0N <COMO>	T	118.7/56.4
L23	6200012700	S.COI 0.50-2.0-6TL 35.0N <COMO>	T	104.4/49.9
L24	6200011210	S.COI C2012C-1R0J-A	T	101.5/44.6
	6200011210	S.COI C2012C-1R0J-A	[USA-01]	
	6200011210	S.COI C2012C-1R0J-A	[USA-02]	
L201	6200009920	S.COI C2012C-R10G-A	T	116.0/44.9
L202	6200010320	S.COI C2012C-R15G-A	T	123.3/44.2
L203	6200011680	S.COI LQW18ANR12G00D	T	115.4/34.8
L204	6200011200	S.COI C2012C-R82J-A	T	115.2/28.4
L206	6200013750	S.COI MLK1005SR10JT	T	112.5/33.0
L207	6200009620	S.COI MLG1608B 68NJ-T	T	109.8/34.7
L211	6200009141	S.COI NLV25T-6R8J	T	84.3/17.0
L301	6200009920	S.COI C2012C-R10G-A	B	129.4/33.7
L302	6200009920	S.COI C2012C-R10G-A	B	129.4/39.4
L303	6200010330	S.COI C2012C-R18G-A	B	129.4/34.1
L304	6200007360	S.COI ELJND R47J	B	123.9/28.6
L305	6200013780	S.COI MLK1005S56NJT	B	128.9/26.9
L306	6200013780	S.COI MLK1005S56NJT	B	128.9/25.3
L401	6200010910	S.COI LQW18AN56NG00D	T	125.4/12.2
L402	6200010910	S.COI LQW18AN56NG00D	T	130.3/11.8
L403	6200010910	S.COI LQW18AN56NG00D	T	130.3/16.6
L404	6200009250	S.COI LQW18ANR22G00D (LQW1608AR22G00)	T	127.1/22.0
L901	6200005041	S.COI NLV25T-220J	B	41.0/37.4
L902	6200002861	S.COI NLV25T-4R7J	B	41.0/32.4
L903	6200002861	S.COI NLV25T-4R7J	B	41.0/34.9
R1	70300010040	S.RES ERJ2GEJ-JPW	T	71.9/16.8
R2	7030008370	S.RES ERJ2GEJ 561 X (560)	T	73.1/16.4
R3	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	78.3/18.9
R4	7030005160	S.RES ERJ2GEJ 105 X (1M)	T	76.6/16.5
R35	7030007270	S.RES ERJ2GEJ 151 X (150)	B	70.7/28.7
R36	7030004980	S.RES ERJ2GEJ 101 X (100)	T	71.5/18.3
R51	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	62.4/46.4
R52	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	64.4/48.0
R53	7030005000	S.RES ERJ2GEJ 471 X (470)	B	60.5/44.1
R61	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	67.2/35.5
R62	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	T	69.7/47.1
R63	70300010040	S.RES ERJ2GEJ-JPW	T	69.2/45.9
R66	7030005530	S.RES ERJ2GEJ 100 X (10)	T	64.4/50.7
R67	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	65.3/49.0
R68	7030007340	S.RES ERJ2GEJ 153 X (15K)	T	76.5/46.8
R69	7030004980	S.RES ERJ2GEJ 101 X (100)	T	68.0/49.0
R70	70300010040	S.RES ERJ2GEJ-JPW	T	63.0/49.0
R71	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	86.0/51.8
R72	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	84.4/51.8
R73	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	91.9/48.0
R74	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	90.2/48.0
R75	7030007240	S.RES ERJ2GEJ680U (68)	T	87.5/43.9
R76	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	80.3/47.6
R78	7030007280	S.RES ERJ2GEJ 331 X (330)	T	77.2/48.1
R79	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	T	76.9/49.4
R80	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	76.4/51.2
R82	7030005240	S.RES ERJ2GEJ 473 X (47K)	T	74.6/51.2
R83	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	74.6/45.8
R84	7030007250	S.RES ERJ2GEJ 220 X (22)	T	72.9/45.8
R87	7030005000	S.RES ERJ2GEJ 471 X (470)	T	72.9/51.2
R88	70300010040	S.RES ERJ2GEJ-JPW	T	71.2/51.2
R91	7030005080	S.RES ERJ2GEJ 823 X (82K)	T	115.5/62.0
R96	7030009200	S.RES ERJ2GEJ 390 X (39)	T	107.2/44.4
	7030009200	S.RES ERJ2GEJ 390 X (39)	[USA-01]	
	7030009200	S.RES ERJ2GEJ 390 X (39)	[USA-02]	
R97	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	T	98.9/43.8
	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	[USA-01]	
	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	[USA-02]	
R98	7030009280	S.RES ERJ2GEJ 391 X	[UK]	111.9/44.3
	7030009280	S.RES ERJ2GEJ 391 X	[EUR]	
	7030009280	S.RES ERJ2GEJ 391 X	[HOL]	
	7030009280	S.RES ERJ2GEJ 391 X	[FRG]	
	7030009280	S.RES ERJ2GEJ 391 X	[UK]	
	7030009280	S.RES ERJ2GEJ 391 X	[EUR-01]	
	7030009280	S.RES ERJ2GEJ 391 X	[HOL-01]	
	7030009280	S.RES ERJ2GEJ 391 X	[FRG-01]	
	7030009280	S.RES ERJ2GEJ 391 X	[EUR-02]	

Eqv.= This component is equivalent to the REF No. component listed above, and may be substituted on parts orders and repairs.

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

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
W1	7030012290	JUM RDS2T0R0		
W2	8900014871	CAB OPC-1332A-1(P0.5N40L100)		
W3	8900020400	CAB OPC-2216 <TJM>		
EP401	6910016330	S.BEA MMZ1005S 601CT-S	T	123.7/21.0
EP701	6910016330	S.BEA MMZ1005S 601CT-S	B	8.2/10.1
EP702	6910016330	S.BEA MMZ1005S 601CT-S	B	8.9/14.2
EP703	6910019100	S.BEA MPZ1608S101AT	B	20.0/33.0
EP704	6910019100	S.BEA MPZ1608S101AT	B	23.1/33.0
EP705	6910019100	S.BEA MPZ1608S101AT	B	12.7/26.4
EP706	6910019100	S.BEA MPZ1608S101AT	B	17.6/33.2

[LOGIC UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1140016243	S.IC STM32F100ZET6B(FX3338A3)	B	79.0/30.0
IC2	1110006740	S.IC LMV3581PWR	B	37.0/36.0
IC3	1130009981	S.IC TC7W53FK(TE85LF)	B	38.5/31.8
IC4	1180003570	S.REG NJM2830U1-33-TE1-#ZZZB	B	33.0/10.5
IC5	1130016110	S.IC TC7WH14FK(TE85LF)	B	54.6/13.3
IC6	1130008711	S.IC TC7SET04FU(T5LJF)	B	47.7/40.2
IC7	1130016110	S.IC TC7WH14FK(TE85LF)	B	54.5/39.0
IC8	1170000352	S.IC PC357N6J000F	B	127.0/36.0
IC9	1130016810	S.IC GT24C256-2GLI-TR <MSK>	B	84.0/49.5
IC10	1110007620	S.IC NJU7704F3-42A-TE1-#ZZZB	B	43.3/11.2
IC11	1110003650	S.IC NJM2211M-TE1-#ZZZB	B	34.5/45.5
IC12	1130009301	S.IC TC7SET08FU(T5LJF)	B	46.1/53.7
Q3	1590001330	S.TRA DTA114EUA T106	B	54.9/16.9
Q4	1530004140	S.TRA L2SC4081RT1G <SLVJ>	B	53.9/20.8
Q5	1500004140	S.TRA L2SC4081RT1G <SLVJ>	B	50.2/36.5
Q6	1510001151	S.TRA L2SA1576AST1G <SLVJ>	B	47.4/36.8
Q7	1560000541	S.FET 2SK880-Y(T5R1COMF)	B	53.0/35.3
Q8	1530004140	S.TRA L2SC4081RT1G <SLVJ>	B	134.2/36.7
Q9	1590000710	S.TRA DTC124EUA T106	B	132.2/38.9
D3	1750001810	S.DIO L1SS400T1G <SLVJ>	B	55.9/19.6
D4	1750001810	S.DIO L1SS400T1G <SLVJ>	B	130.5/33.2
D5	1750001180	S.DIO KDS122 RTK/P	B	134.2/33.6
D7	1790001990	S.VAR EZJPOV080DA	B	134.5/29.7
X1	6050012460	S.XTA CR-834(SMD-49/7.9872 MHz) <JJE>	B	97.5/27.5
R1	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	65.3/34.8
R2	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	65.3/35.8
R3	7410001130	S.ARR EXB28V102JX	B	49.5/30.5
R5	7030004970	S.RES ERJ2GEJ 470 X (47)	B	61.5/22.1
R7	7030010040	S.RES ERJ2GEJ-JPW	B	64.8/20.9
R11	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	72.0/43.3
R12	7410001230	S.ARR EXB28V101JX	B	58.5/32.5
R16	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	82.4/43.7
R17	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	46.3/51.8
R21	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	72.3/16.7
R22	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	73.7/16.3
R23	7410001130	S.ARR EXB28V102JX	B	58.8/26.0
R24	7410001140	S.ARR EXB28V104JX	B	64.0/24.4
R25	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	79.1/16.7
R26	7030005600	S.RES ERJ2GEJ 273 X (27K)	B	86.3/16.7
R27	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	86.9/14.7
	7030009290	S.RES ERJ2GEJ 562 X (5.6K) [USA]		
	7030008010	S.RES ERJ2GEJ 123 X (12K) [UK]		
	7030009710	S.RES ERJ2GEJ 203 X (20K) [EUR]		
	7030009710	S.RES ERJ2GEJ 203 X (20K) [HOL]		
	7030005060	S.RES ERJ2GEJ 333 X (33K) [FRG]		
	7030007290	S.RES ERJ2GEJ 222 X (2.2K) [USA-01]		
	7030009290	S.RES ERJ2GEJ 562 X (5.6K) [UK-01]		
	7030008010	S.RES ERJ2GEJ 123 X (12K) [EUR-01]		
	7030009710	S.RES ERJ2GEJ 203 X (20K) [HOL-01]		
	7030005060	S.RES ERJ2GEJ 333 X (33K) [FRG-01]		
	7030007290	S.RES ERJ2GEJ 222 X (2.2K) [USA-02]		
	7030008010	S.RES ERJ2GEJ 123 X (12K) [EUR-02]		
R28	7030011670	S.RES ERJ2RKF 3902 (39K)	B	85.1/12.9
R29	7030012320	S.RES ERJ2RKD 2203X (220K)	B	85.1/11.9
R34	7030004980	S.RES ERJ2GEJ 101 X (100)	B	92.8/27.2
R51	7030005530	S.RES ERJ2GEJ 100 X (10)	B	38.3/40.4
R52	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	108.2/27.5
R53	7030005170	S.RES ERJ2GEJ 474 X (470K)	B	35.3/39.8
R54	7030007350	S.RES ERJ2GEJ 393 X (39K)	B	33.7/50.4
R55	7030012740	S.RES ERJ2RHD 1602X (16.0K)	B	35.1/50.8
R56	7030008400	S.RES ERJ2GEJ 182 X (1.8K)	B	34.1/51.8
R57	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	31.9/50.4
R61	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	87.7/46.3
R62	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	87.7/45.3
R65	7030008010	S.RES ERJ2GEJ 123 X (12K)	B	45.7/8.3
R66	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	39.8/12.1
R67	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	40.2/10.7
R71	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	42.5/36.0
R73	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	32.5/36.2
R74	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	35.8/33.6
R75	7030004980	S.RES ERJ2GEJ 101 X (100)	B	34.0/32.1
R81	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	57.4/13.8
R82	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	56.9/16.9
R83	7030005530	S.RES ERJ2GEJ 100 X (10)	B	58.1/20.9
R84	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	54.4/18.7
R85	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	52.8/13.3
R90	7030005220	S.RES ERJ2GEJ 223 X (22K)	B	50.9/39.4
R91	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	49.5/39.0
R92	7030004970	S.RES ERJ2GEJ 470 X (47)	B	48.7/35.0
R95	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	54.0/32.5
R96	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	54.0/33.5
R97	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	55.5/35.8
R101	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	121.7/38.3
R102	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	122.2/35.1
R103	7030009270	S.RES ERJ2GEJ 821 X (820)	B	129.6/32.0
R106	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	136.0/34.6
R107	7030010430	S.RES ERJ2GEJ 120 X (12)	B	132.4/35.4
R108	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	134.5/28.8
R111	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	3.7/17.5
R113	7030003520	S.RES ERJ3GEYJ 472 V (4.7K)	B	5.7/18.0
R116	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	44.0/54.2
C1	4030016930	S.CER C1005 JB 1A 104K-T	B	70.5/16.7
C2	4030016930	S.CER C1005 JB 1A 104K-T	B	65.8/38.5
C3	4030016930	S.CER C1005 JB 1A 104K-T	B	87.7/43.3
C4	4030016930	S.CER C1005 JB 1A 104K-T	B	88.1/16.7

Eqv.= This component is equivalent to the REF No. component listed above, and may be substituted on parts orders and repairs.

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

[LOGIC UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C5	4030016930	S.CER C1005 JB 1A 104K-T	B	92.3/31.0
C6	4030016930	S.CER C1005 JB 1A 104K-T	B	80.5/15.0
C7	4030016930	S.CER C1005 JB 1A 104K-T	B	75.5/16.7
C8	4030016930	S.CER C1005 JB 1A 104K-T	B	65.7/26.5
C9	4030016930	S.CER C1005 JB 1A 104K-T	B	65.3/32.0
C10	4030016930	S.CER C1005 JB 1A 104K-T	B	76.0/43.3
C11	4030016930	S.CER C1005 JB 1A 104K-T	B	81.0/43.3
C12	4030016930	S.CER C1005 JB 1A 104K-T	B	92.3/36.0
C13	4030017460	S.CER C1005 JB 1H 102K-T	B	70.5/15.7
C14	4030017460	S.CER C1005 JB 1H 102K-T	B	64.8/38.5
C15	4030017460	S.CER C1005 JB 1H 102K-T	B	87.7/44.3
C16	4030017460	S.CER C1005 JB 1H 102K-T	B	88.7/15.7
C17	4030016790	S.CER C1005 JB 1E 103K-T	B	93.3/31.0
C18	4030016790	S.CER C1005 JB 1E 103K-T	B	80.5/14.0
C19	4030016790	S.CER C1005 JB 1E 103K-T	B	64.7/26.5
C20	4030016790	S.CER C1005 JB 1E 103K-T	B	76.0/44.3
C24	4030017460	S.CER C1005 JB 1H 102K-T	B	67.0/45.2
C25	4030016930	S.CER C1005 JB 1A 104K-T	B	63.8/45.2
C26	4030020300	S.CER GRM21BB31C475KA87L	B	92.8/20.9
C27	4030016790	S.CER C1005 JB 1E 103K-T	B	94.2/20.4
C31	4030016950	S.CER C1005 JB 1A 473K-T	B	85.5/15.3
C32	4030016950	S.CER C1005 JB 1A 473K-T	B	84.5/16.3
C33	4030016950	S.CER C1005 JB 1A 473K-T	B	85.1/13.9
C35	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/23.2
C36	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/24.2
C37	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/25.2
C38	4030016950	S.CER C1005 JB 1A 473K-T	B	92.8/26.2
C43	4030017410	S.CER C1005 CH 1H 240J-T	B	94.3/28.5
C44	4030017410	S.CER C1005 CH 1H 240J-T	B	94.3/26.7
C57	4030016930	S.CER C1005 JB 1A 104K-T	B	87.3/48.5
C61	4030016790	S.CER C1005 JB 1E 103K-T	B	106.8/27.1
C62	4030017760	S.CER C1005 JB 1H 222K-T	B	39.3/41.3
C63	4030019990	S.CER C1005 JB 1C 104K-T	B	40.3/41.3
C64	4030016790	S.CER C1005 JB 1E 103K-T	B	37.0/40.4
C65	4030018890	S.CER C1005 JB 0J 224K-T	B	35.3/40.8
C66	4030017760	S.CER C1005 JB 1H 222K-T	B	30.5/50.8
C67	4030016930	S.CER C1005 JB 1A 104K-T	B	29.1/50.4
C68	4030016790	S.CER C1005 JB 1E 103K-T	B	32.8/51.8
C69	4340000310	S.MYL ECHU 1C 333JX5	B	38.2/50.7
C71	4030017920	S.CER C1005 JB 1A 683K-T	B	43.0/13.3
C72	4030017480	S.CER C1608 JB 1A 474K-T	B	41.4/11.2
C74	4030017460	S.CER C1005 JB 1H 102K-T	B	44.0/9.1
C81	4030016930	S.CER C1005 JB 1A 104K-T	B	37.6/33.6
C82	4030017460	S.CER C1005 JB 1H 102K-T	B	39.2/30.0
C83	4030019990	S.CER C1005 JB 1C 104K-T	B	34.0/33.1
C84	4030017460	S.CER C1005 JB 1H 102K-T	B	33.6/34.1
C85	4030020300	S.CER GRM21BB31C475KA87L	B	38.8/8.8
C86	4030017460	S.CER C1005 JB 1H 102K-T	B	40.3/8.9
C87	4030016790	S.CER C1005 JB 1E 103K-T	B	38.4/11.6
C88	4030020240	S.CER GRM31CR11C475KA01L	B	36.8/10.5
C89	4030017460	S.CER C1005 JB 1H 102K-T	B	41.5/33.8
C91	4030016930	S.CER C1005 JB 1A 104K-T	B	56.4/13.8
C92	4030017460	S.CER C1005 JB 1H 102K-T	B	57.1/20.0
C95	4030016790	S.CER C1005 JB 1E 103K-T	B	49.5/40.8
C96	4030016930	S.CER C1005 JB 1A 104K-T	B	55.5/34.8
C101	4030017460	S.CER C1005 JB 1H 102K-T	B	120.2/36.9
C102	4030016930	S.CER C1005 JB 1A 104K-T	B	121.2/36.9
C103	4030016790	S.CER C1005 JB 1E 103K-T	B	122.2/36.9
C104	4030017920	S.CER C1005 JB 1A 683K-T	B	131.4/32.0
C105	4030017460	S.CER C1005 JB 1H 102K-T	B	131.4/30.0
C106	4030017460	S.CER C1005 JB 1H 102K-T	B	128.2/30.6
C107	4030016930	S.CER C1005 JB 1A 104K-T	B	136.9/34.6
C108	4030017460	S.CER C1005 JB 1H 102K-T	B	134.5/27.9
C111	4030016790	S.CER C1005 JB 1E 103K-T	B	45.8/26.5
C112	4030020310	S.CER GRM31CB31C106KA88L	B	44.6/29.6
C113	4030016790	S.CER C1005 JB 1E 103K-T	B	26.3/19.4
C114	4030017460	S.CER C1005 JB 1H 102K-T	B	27.3/19.4
C115	4030017460	S.CER C1005 JB 1H 102K-T	B	24.1/26.2
C116	4030017460	S.CER C1005 JB 1H 102K-T	B	23.2/22.1
C155	4030016790	S.CER C1005 JB 1E 103K-T	B	27.7/26.9
C162	4030016930	S.CER C1005 JB 1A 104K-T	B	7.2/16.3
C165	4030017460	S.CER C1005 JB 1H 102K-T	B	16.2/15.3
C166	4030017460	S.CER C1005 JB 1H 102K-T	B	16.2/16.3
J1	6510022472	S.CON 40FLT-SM2-TB(LF)(SN)(M)	B	35.0/23.0
J4	6510018971	S.CON B4B-PH-SM4-TB(LF)(SN)	B	127.0/22.5
EP11	6910016330	S.BEA MMZ1005S 601CT-S	B	129.6/31.0

[CONNECT UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C1	4030016790	S.CER C1005 JB 1E 103K-T	B	2.1/11.9
J1	6510022440	CON LTW-8MP-C NUTGASKET <LIA>		
J2	6510025142	S.CON 10FLT-SM2-TB(LF)(SN)(M)	B	4.3/15.0
EP2	6910019100	S.BEA MPZ1608S101AT	B	4.5/19.1

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

[VCO UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
Q2	1590004070	S.TRA LDTC144EET1G <SLVJ>	T	13.4/9.3
Q3	1530002921	S.TRA 2SC4226-T1 Y25 (R25)	T	11.9/2.8
Q4	1530002921	S.TRA 2SC4226-T1 Y25 (R25)	T	18.6/2.3
Q5	1530003950	S.TRA KTC4080 Y-RTK/P	T	7.1/6.9
Q6	1530003950	S.TRA KTC4080 Y-RTK/P	T	4.9/2.6
Q7	1530003950	S.TRA KTC4080 Y-RTK/P	T	5.4/11.3
Q8	1590004050	S.TRA LDTA144EET1G <SLVJ>	T	11.4/12.5
D1	1750001700	S.DIO HSC277TRF-E	T	11.5/10.0
D2	1750001700	S.DIO HSC277TRF-E	T	13.3/7.7
D3	1750001780	S.VAR HVB350BYPTL-E	T	14.4/5.6
L1	6200003711	S.COI NLV25T-2R7J	T	18.2/9.2
L2	6200011410	S.COI C2520C-82NG-A	T	17.9/5.9
L3	6200013750	S.COI MLK1005SR10JT	T	5.7/8.3
L4	6200013750	S.COI MLK1005SR10JT	T	3.5/4.0
L5	6200013750	S.COI MLK1005SR10JT	T	4.0/12.7
R6	7030009320	S.RES ERJ2GEJ 4R7 X (4.7)	T	7.5/10.8
R7	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	16.4/11.0
R8	7030005240	S.RES ERJ2GEJ 473 X (47K)	T	16.2/9.8
R9	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	16.2/8.9
R11	7030005000	S.RES ERJ2GEJ 471 X (470)	T	10.0/12.0
R12	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	18.5/13.7
R13	7030007340	S.RES ERJ2GEJ 153 X (15K)	T	15.5/13.3
R14	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	18.5/12.8
R15	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	13.4/12.8
R16	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	9.4/13.2
R21	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	9.9/1.4
R22	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	20.7/1.7
R23	7030009160	S.RES ERJ2GEJ 181 X (180)	T	15.6/2.2
R25	7030008370	S.RES ERJ2GEJ 561 X (560)	T	9.9/3.2
R26	7030005010	S.RES ERJ2GEJ 681 X (680)	T	6.9/9.6
R27	7030005070	S.RES ERJ2GEJ 683 X (68K)	T	7.6/5.1
R31	7030005000	S.RES ERJ2GEJ 471 X (470)	T	4.3/5.6
R32	7030005070	S.RES ERJ2GEJ 683 X (68K)	T	6.8/1.7
R33	7030007270	S.RES ERJ2GEJ 151 X (150)	T	2.9/5.3
R34	7030009200	S.RES ERJ2GEJ 390 X (39)	T	1.8/4.4
R41	7030005000	S.RES ERJ2GEJ 471 X (470)	T	3.5/9.5
R42	7030007350	S.RES ERJ2GEJ 393 X (39K)	T	5.1/9.5
R43	7030003860	S.RES ERJ3GE JPW V	T	16.1/3.7
C4	4030017460	S.CER C1005 JB 1H 102K-T	T	18.3/11.3
C6	4030016790	S.CER C1005 JB 1E 103K-T	T	3.5/7.5
C8	4030017460	S.CER C1005 JB 1H 102K-T	T	15.2/10.8
C9	4030017460	S.CER C1005 JB 1H 102K-T	T	15.0/9.5
C11	4030017460	S.CER C1005 JB 1H 102K-T	T	12.8/10.8
C12	4030017460	S.CER C1005 JB 1H 102K-T	T	14.0/11.3
C13	4030018860	S.CER C1005 JB 0J 105K-T	T	13.4/13.7
C14	4030017460	S.CER C1005 JB 1H 102K-T	T	14.6/13.3
C15	4030017460	S.CER C1005 JB 1H 102K-T	T	17.3/13.3
C16	4030011810	S.CER C1608 JB 1A 224K-T	T	10.3/9.9
C21	4030018010	S.CER C1005 CH 1H 360J-T	T	16.2/8.0
C22	4030017670	S.CER C1005 CH 1H 390J-T	T	15.0/7.6
C24	4030017760	S.CER C1005 JB 1H 222K-T	T	11.6/7.0
C31	4030017350	S.CER C1005 CH 1H 020B-T	T	12.2/4.7
C32	4030017550	S.CER C1005 CH 1H 1R5B-T	T	20.4/3.3
C33	4030017440	S.CER C1005 CH 1H 221J-T	T	15.6/1.3
C34	4030017460	S.CER C1005 JB 1H 102K-T	T	9.9/4.1
C35	4030006860	S.CER C1608 JB 1H 102K-T	T	14.1/2.7
C36	4030017340	S.CER C1005 CH 1H 010B-T	T	9.9/2.3
C37	4030017460	S.CER C1005 JB 1H 102K-T	T	7.0/8.7
C41	4030017380	S.CER C1005 CH 1H 050B-T	T	6.8/3.3
C42	4030017460	S.CER C1005 JB 1H 102K-T	T	4.8/4.4
C43	4030017400	S.CER C1005 CH 1H 220J-T	T	2.5/3.1
C46	4030017630	S.CER C1005 CH 1H 120J-T	T	4.8/8.3
C47	4030017460	S.CER C1005 JB 1H 102K-T	T	3.5/8.4
C48	4030017460	S.CER C1005 JB 1H 102K-T	T	5.4/13.1
C49	4030017650	S.CER C1005 CH 1H 270J-T	T	3.3/11.3
J1	6910003831	CON IMSA-9230B-1-04Z003-PT1		
J2	6910003831	CON IMSA-9230B-1-04Z003-PT1		

Eqv.= This component is equivalent to the REF No. component listed above, and may be substituted on parts orders and repairs.

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

SECTION 6

MECHANICAL PARTS

[CHASSIS PARTS]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510004881	MR-DSE-01-1 <GA>	1
W1	8900020381	OPC-2214A	1
W2	8900020390	OPC-2215	1
MP1	8510020730	3514 CASE	1
MP3	8930049040	INSULATION SHEET FQ	1
MP4	8930058780	2577 SHEET	1
MP5	8930083960	3338 R-PACKING	1
MP6	8930086910	3514 F-PACKING	1
MP7	8930083990	3338 R-BUSH PLATE	1
MP8	8930084000	3338 A-R-BUSH PLATE Y1260	1
MP9	8510020500	3338 A-MODULE PLATE	1
MP10	8930084010	3338 IC CLIP	1
MP11	8010022280	3338 CHASSIS <STM>	1
MP12	8930034300	1542 ANT SEAL <JST>	1
MP13	8810010610	PHB0 M3 X 8 SUS S (BT)	2
MP14	8810010021	PH BT M2.6X 8 NI-ZC3	2
MP15	8810008661	PHBT M3 X 8 NI-ZC3	7
MP16	8810010610	PHB0 M3 X 8 SUS S (BT)	6
MP17	8810010620	PHB0 M3 X12 SUS S	6
MP18	8510020340	3338 MODULE COVER	1

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1*	6510025142	10FLT-SM2-TB (LF) (SN) (M)	1
J2*	6510022472	40FLT-SM2-TB (LF) (SN) (M)	1
J3*	6510018971	B4B-PH-SM4-TB (LF) (SN)	1
F1*	5210001160	ERBRE3R00V	1
W1*	7030012290	RDS2T0R0	1
W2**	8900014871	OPC-1332A-1 (P0.5N40L100) TJM	1
W3**	8900020400	OPC-2216	1

[FRONT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
MP1	8210028900	3514 FRONT PANEL ASSY	1
MP16	8810008661	PHBT M3 X 8 NI-ZC3	4
MP21	8930055841	2490 EARTH SPRING-1	1
MP22	8810008661	PHBT M3 X 8 NI-ZC3	1

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1*	6510022472	40FLT-SM2-TB (LF) (SN) (M)	1
J4*	6510018971	B4B-PH-SM4-TB (LF) (SN)	1

[CONNECT UNIT]

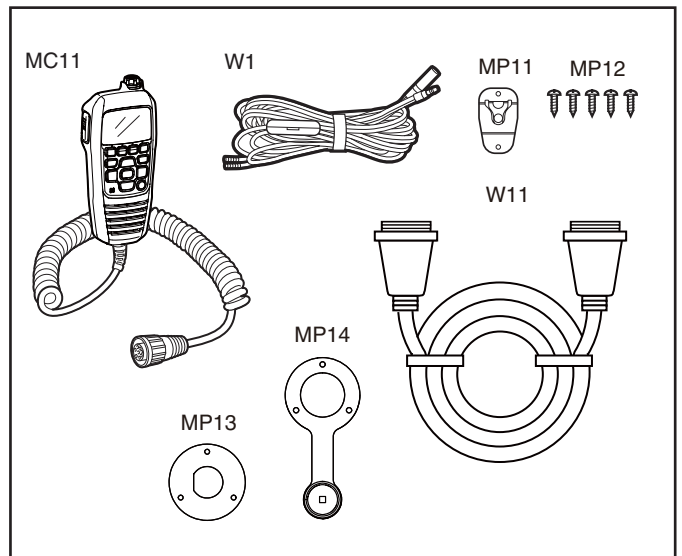
REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510022440	LTW-8MP-C NUTGASKET <LIA>	1
J2*	6510025142	10FLT-SM2-TB (LF) (SN) (M)	1

[VCO UNIT]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
J1*	6910003831	IMSA-9230B-1-04Z003-PT1	1
J2*	6910003831	IMSA-9230B-1-04Z003-PT1	1
MP1	8510020510	3338 VCO CASE Y1269	1
MP2	8510020520	3338 VCO COVER Y1270	1

[ACCESSORIES]

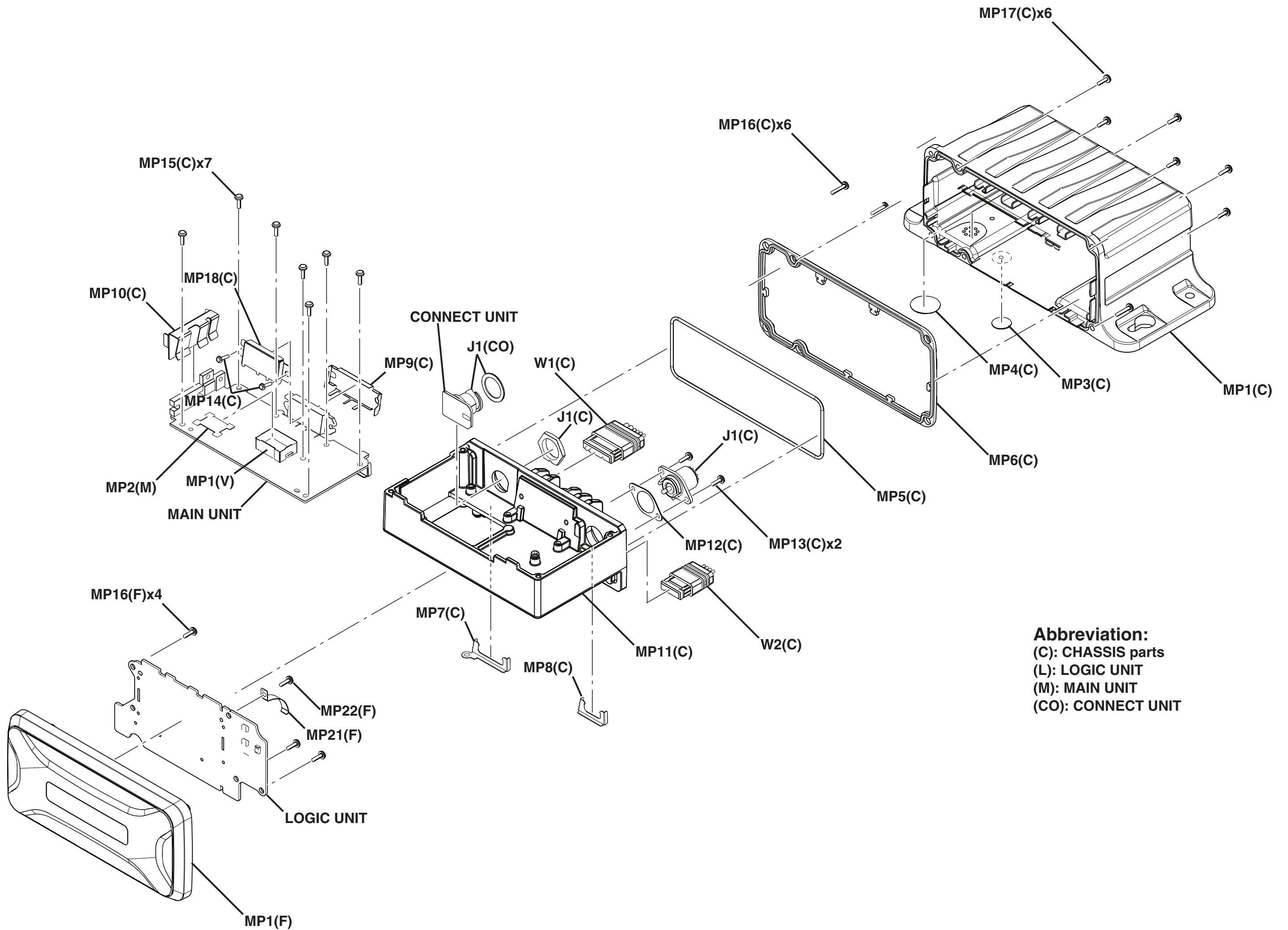
REF NO.	ORDER NO.	DESCRIPTION	QTY.	
MC11	(Optional)	HM-195B	[USA-01] 1	
	(Optional)	HM-195B	[UK-01] 1	
	(Optional)	HM-195B	[EUR-01] 1	
	(Optional)	HM-195B	[HOL-01] 1	
	(Optional)	HM-195B	[FRG-01] 1	
	(Optional)	HM-195SW	[USA-02] 1	
	(Optional)	HM-195SW	[EUR-02] 1	
	W1	8900009041	OPC-891A	1
	W11	(Optional)	OPC-1540	[USA-01] 1
		(Optional)	OPC-1540	[UK-01] 1
(Optional)		OPC-1540	[HOL-01] 1	
(Optional)		OPC-1540	[FRG-01] 1	
(Optional)		OPC-1540	[USA-02] 1	
(Optional)		OPC-1540	[EUR-02] 1	
MP11		8950005110	2289 MIC HANGER Y468	[USA-01] 1
		8950005110	2289 MIC HANGER Y468	[UK-01] 1
		8950005110	2289 MIC HANGER Y468	[EUR-01] 1
		8950005110	2289 MIC HANGER Y468	[HOL-01] 1
	8950005110	2289 MIC HANGER Y468	[FRG-01] 1	
	8950005110	2289 MIC HANGER Y468	[USA-02] 1	
	8950005110	2289 MIC HANGER Y468	[EUR-02] 1	
	MP12	8810004700	PHA M3 X16 SUS	[USA-01] 5
		8810004700	PHA M3 X16 SUS	[UK-01] 5
		8810004700	PHA M3 X16 SUS	[EUR-01] 5
8810004700		PHA M3 X16 SUS	[HOL-01] 5	
8810004700		PHA M3 X16 SUS	[FRG-01] 5	
8810004700		PHA M3 X16 SUS	[USA-02] 5	
8810004700		PHA M3 X16 SUS	[EUR-02] 5	
MP13		8930084860	3384 C-PLATE Y1265	[USA-01] 1
		8930084860	3384 C-PLATE Y1265	[UK-01] 1
		8930084860	3384 C-PLATE Y1265	[EUR-01] 1
	8930084860	3384 C-PLATE Y1265	[HOL-01] 1	
	8930084860	3384 C-PLATE Y1265	[FRG-01] 1	
	8930084860	3384 C-PLATE Y1265	[USA-02] 1	
	8930084860	3384 C-PLATE Y1265	[EUR-02] 1	
	MP14	8930084840	3384 CONNECTOR CAP TOT	[USA-01] 1
		8930084840	3384 CONNECTOR CAP TOT	[UK-01] 1
		8930084840	3384 CONNECTOR CAP TOT	[EUR-01] 1
8930084840		3384 CONNECTOR CAP TOT	[HOL-01] 1	
8930084840		3384 CONNECTOR CAP TOT	[FRG-01] 1	
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8930084840		3384 CONNECTOR CAP TOT	[EUR-02] 1	



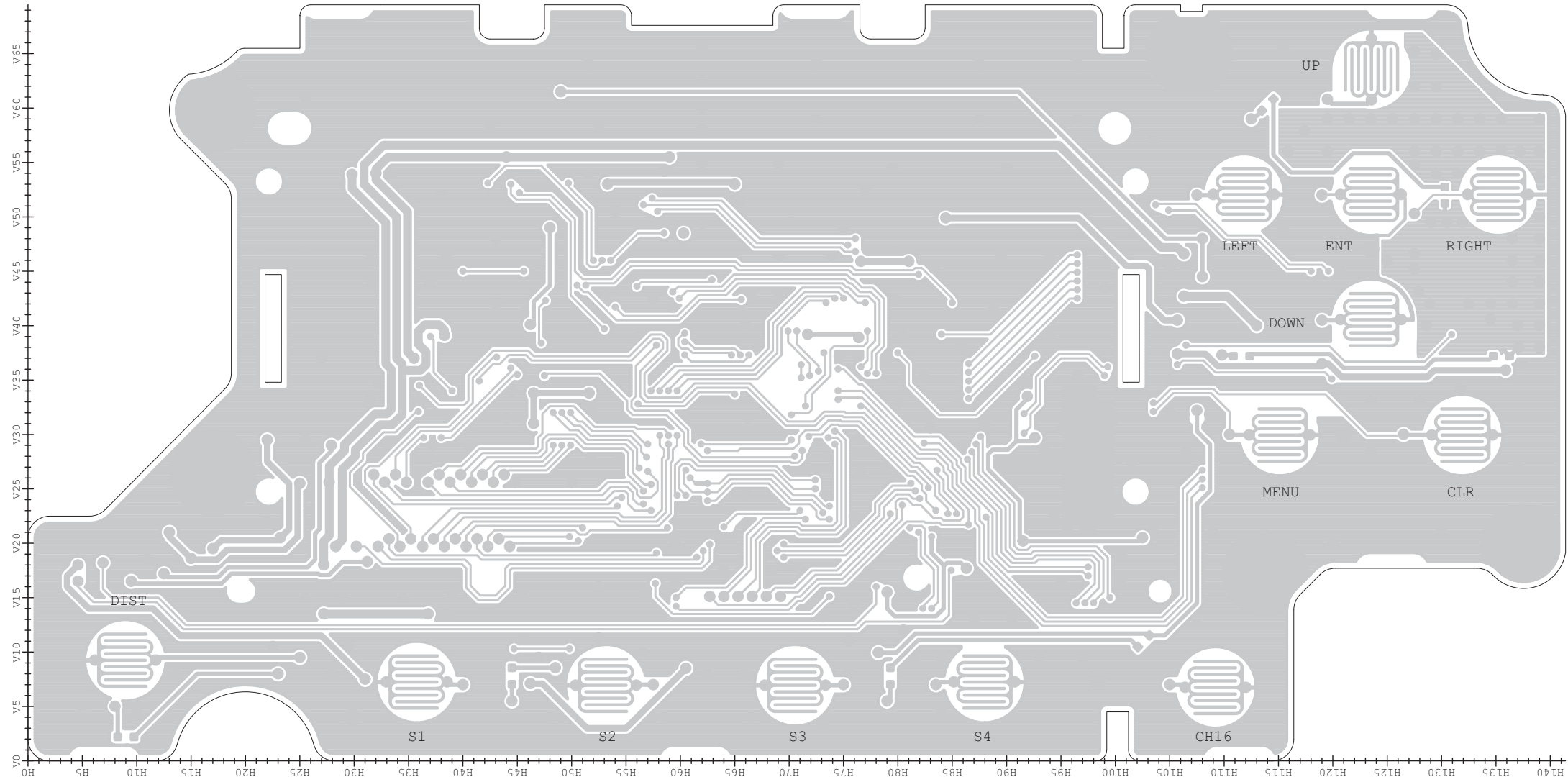
*: Refer to "BOARD LAYOUTS" for the location.

** : Refer to "GENERAL WIRING" for the connection

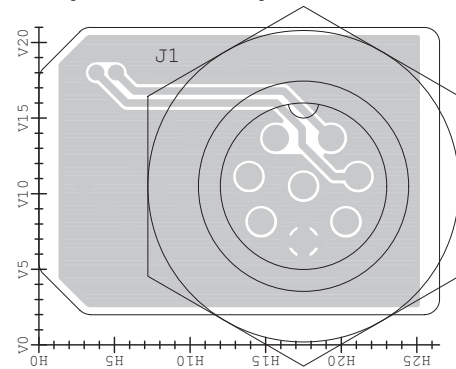
Screw abbreviations A, B0, BT: Self-tapping PH: Pan head ZK: Black NI-ZU: Nickel-Zinc SUS: Stainless



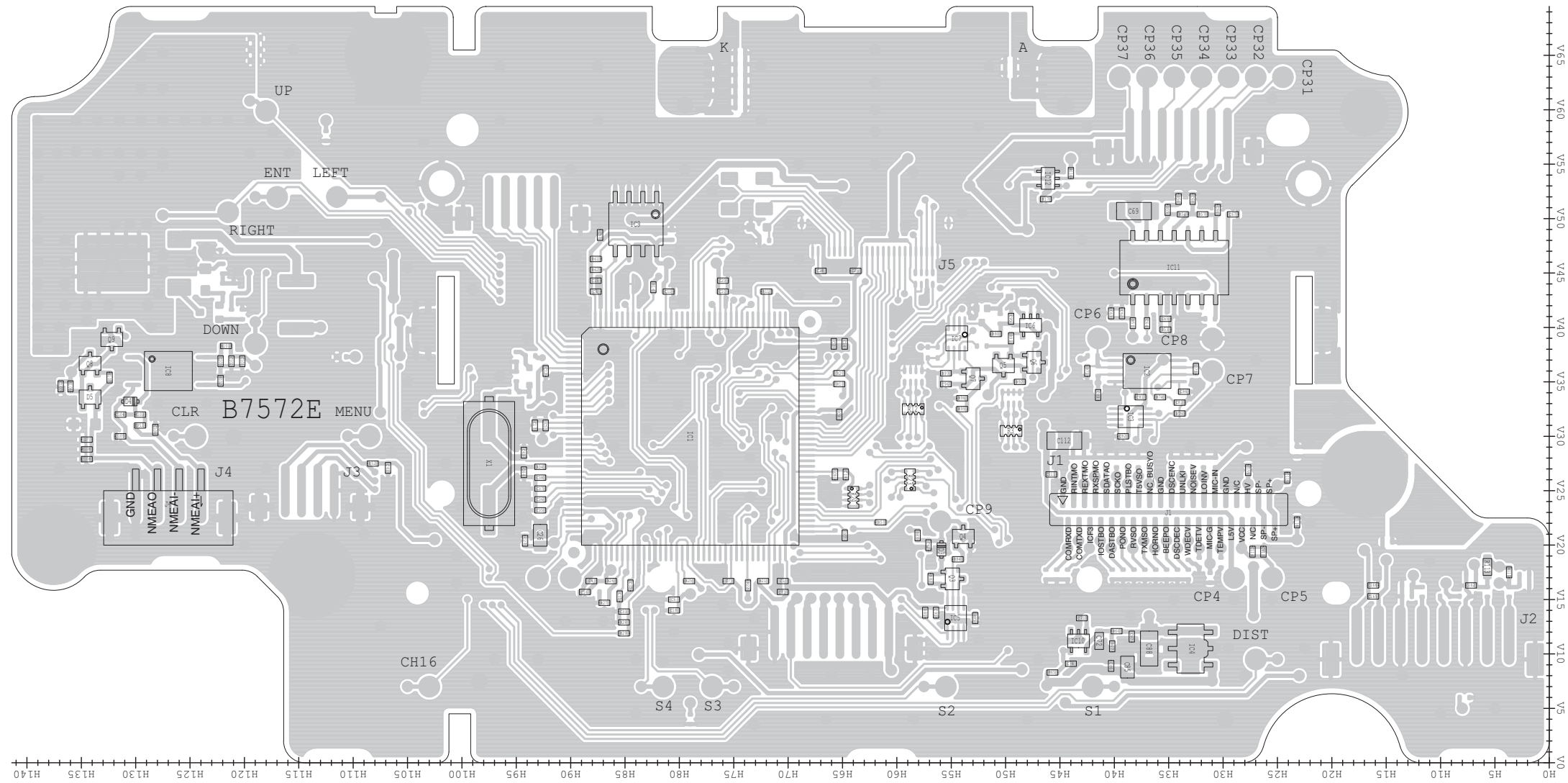
• LOGIC UNIT
(TOP VIEW)



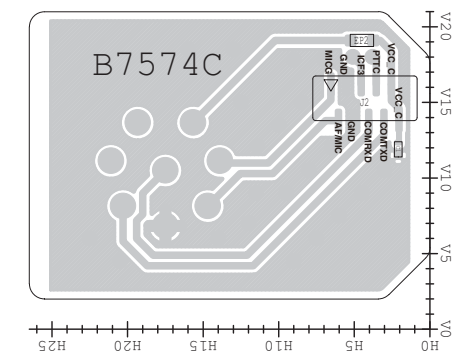
• CONNECT UNIT
(TOP VIEW)



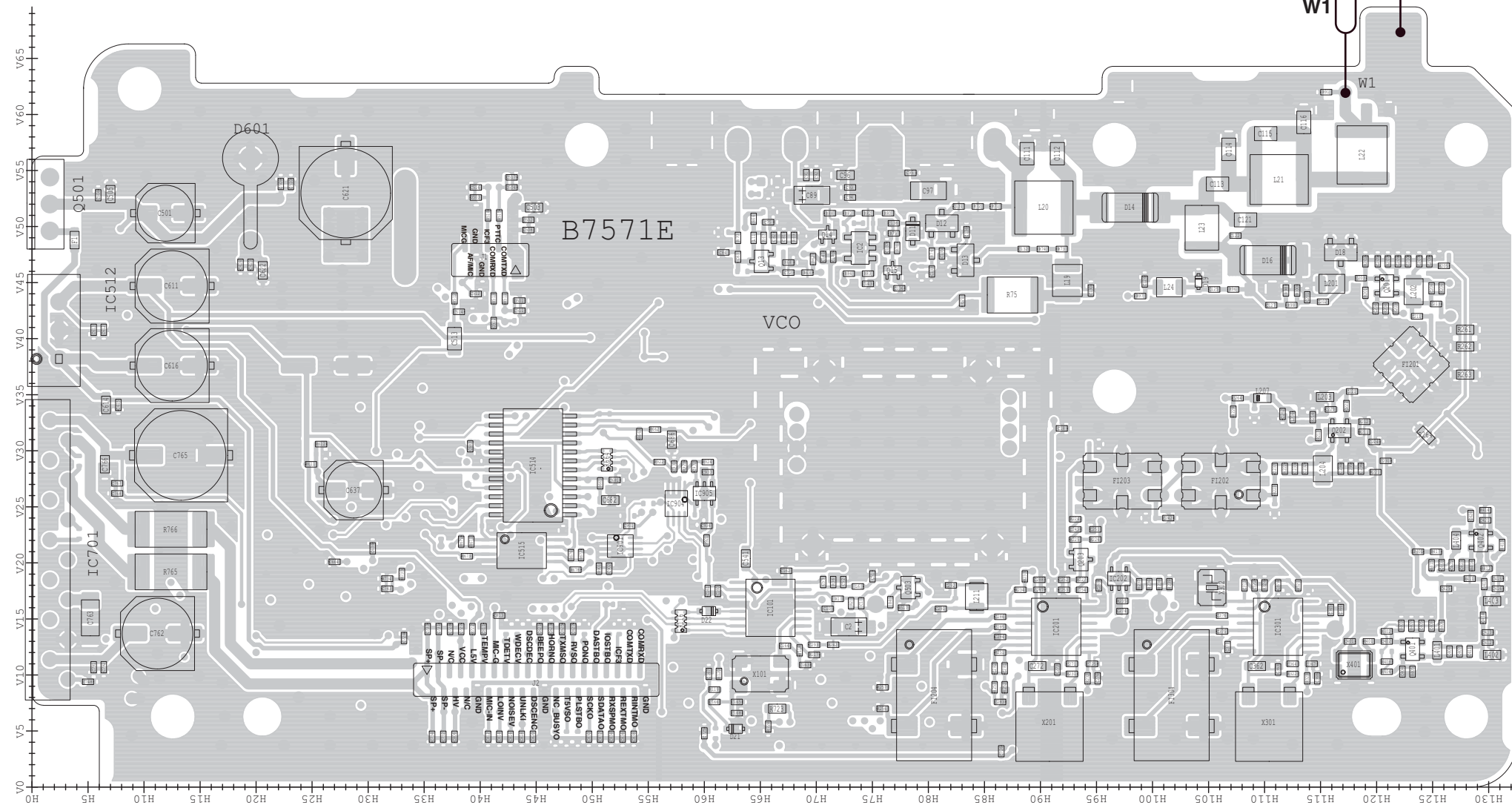
• LOGIC UNIT
(BOTTOM VIEW)



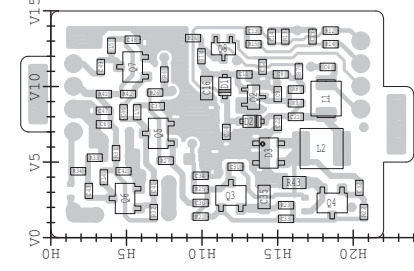
• CONNECT UNIT
(BOTTOM VIEW)



• MAIN UNIT
(TOP VIEW)

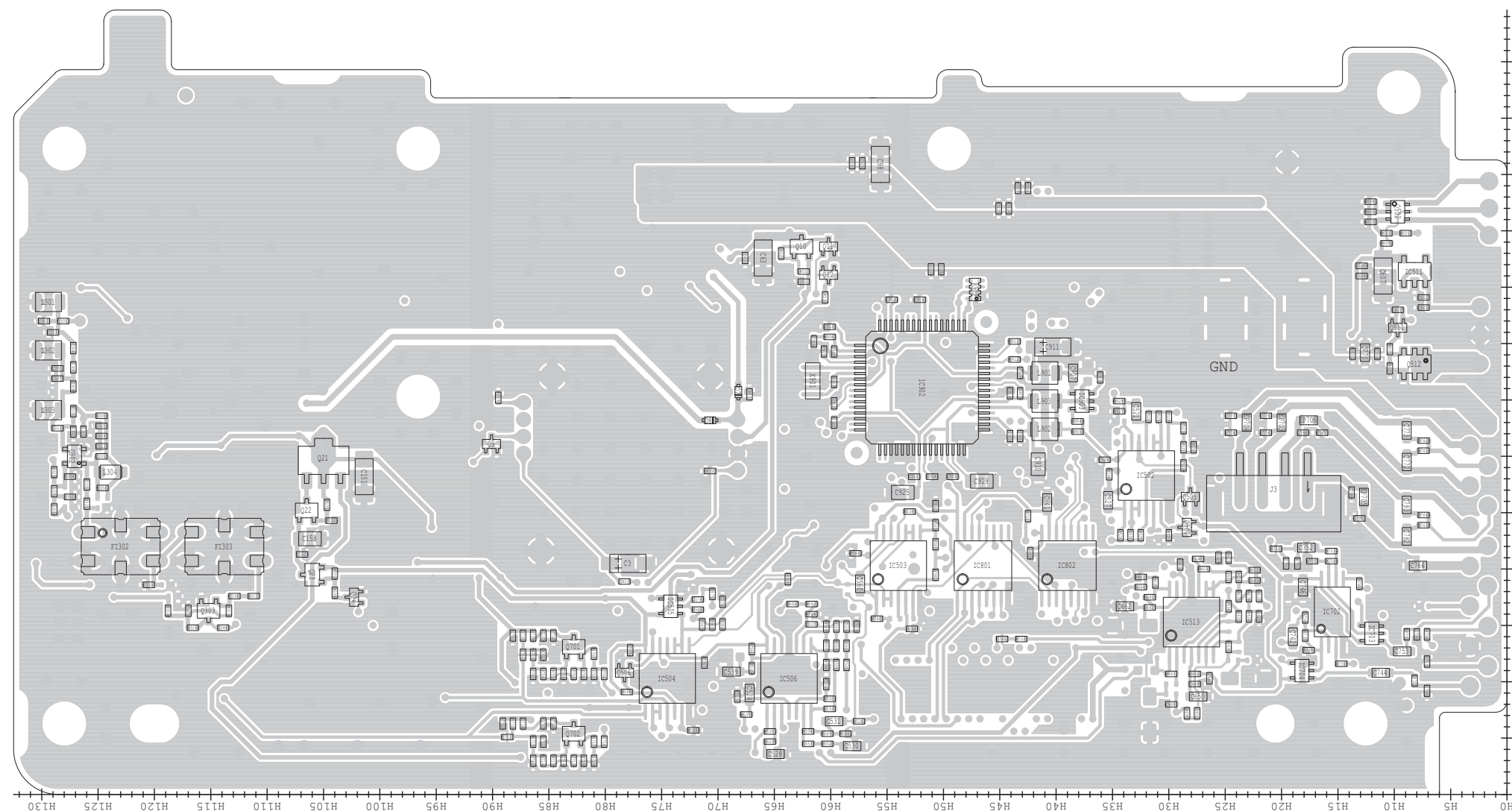
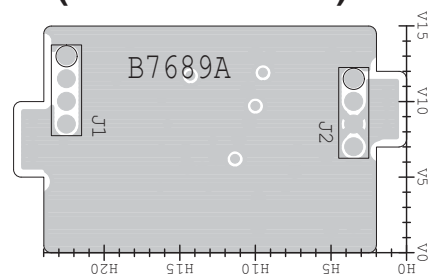


• VCO UNIT
(TOP VIEW)



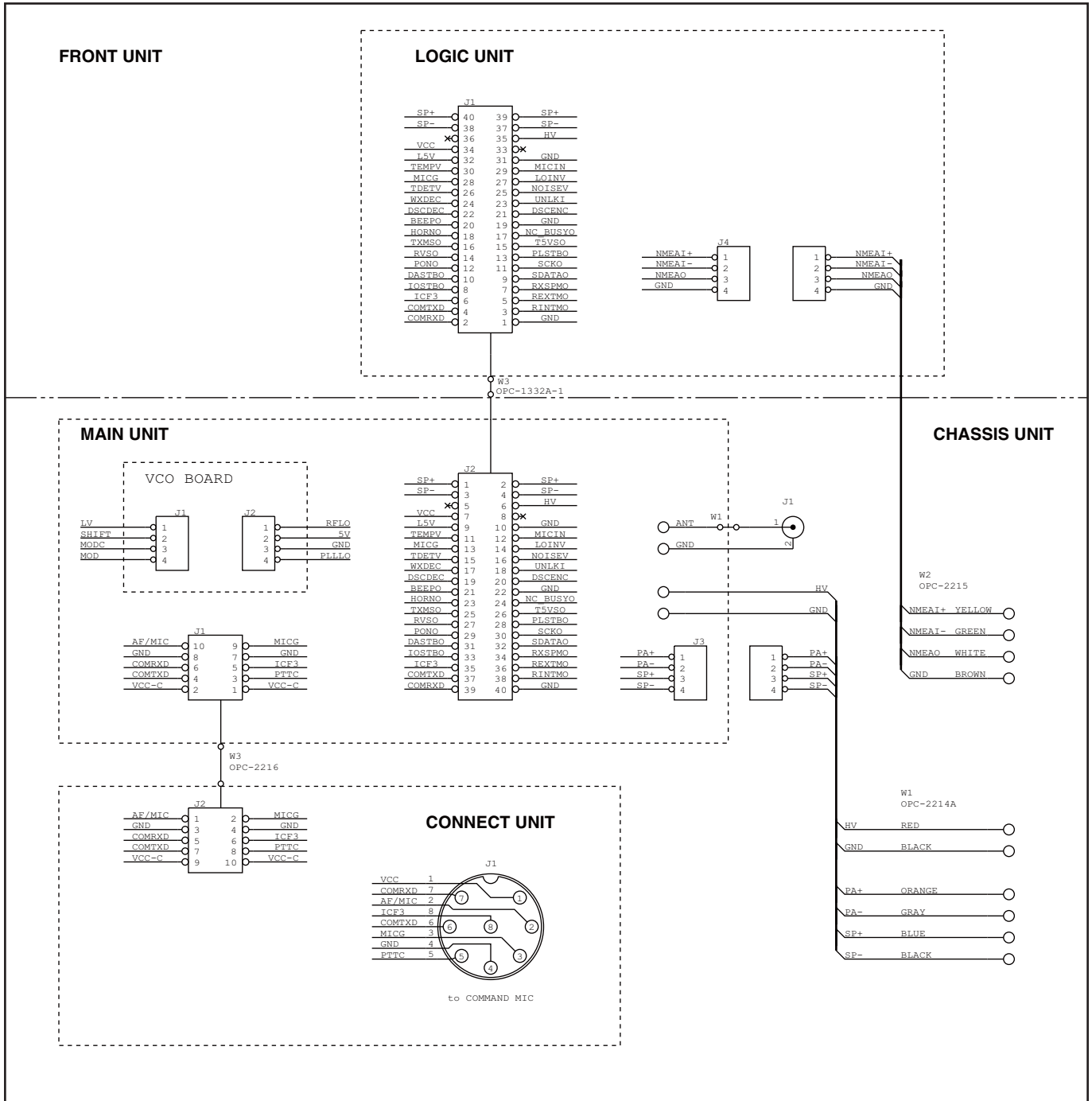
• MAIN UNIT
(BOTTOM VIEW)

• VCO UNIT
(BOTTOM VIEW)



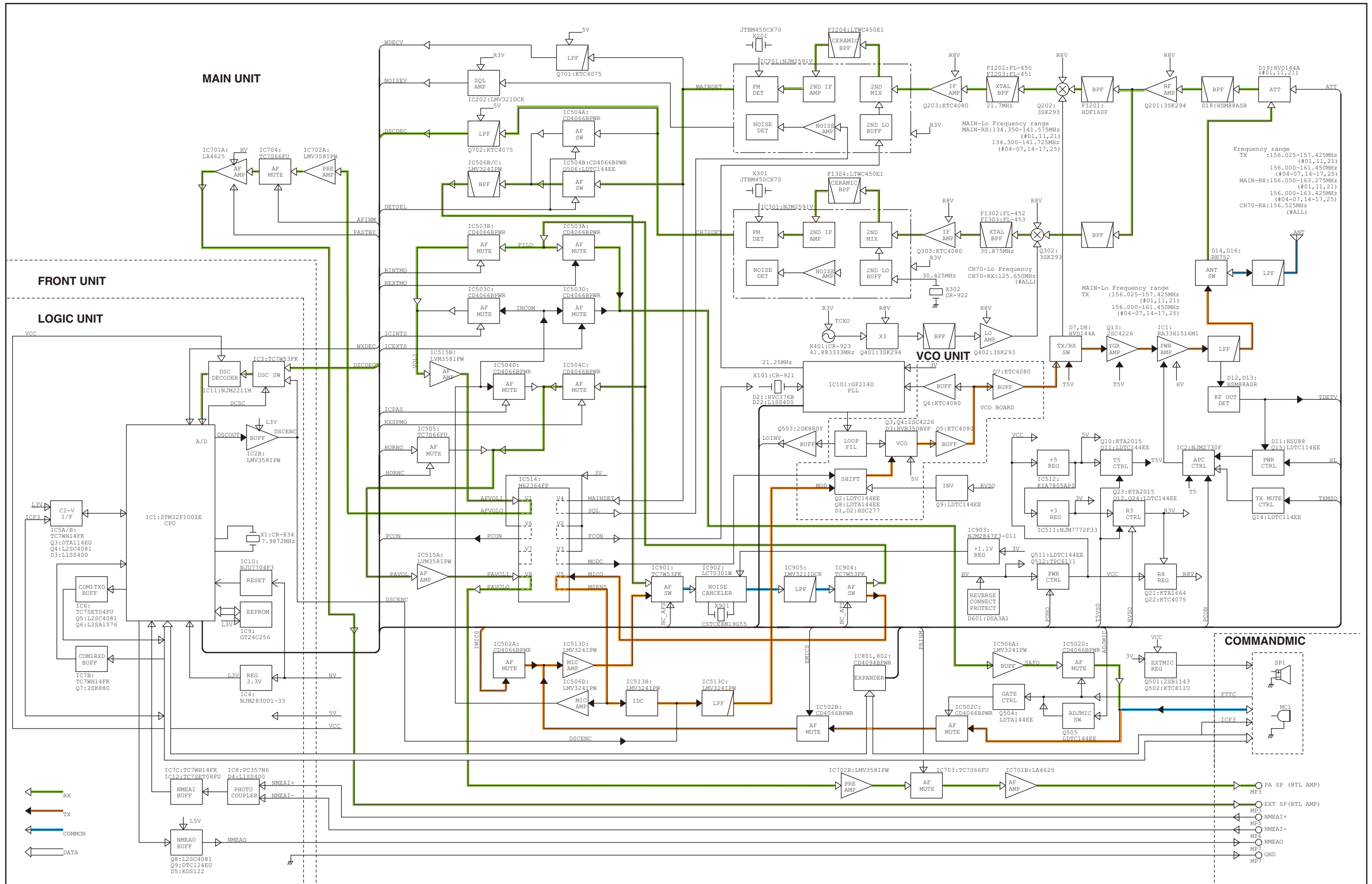
SECTION 8

GENERAL WIRING

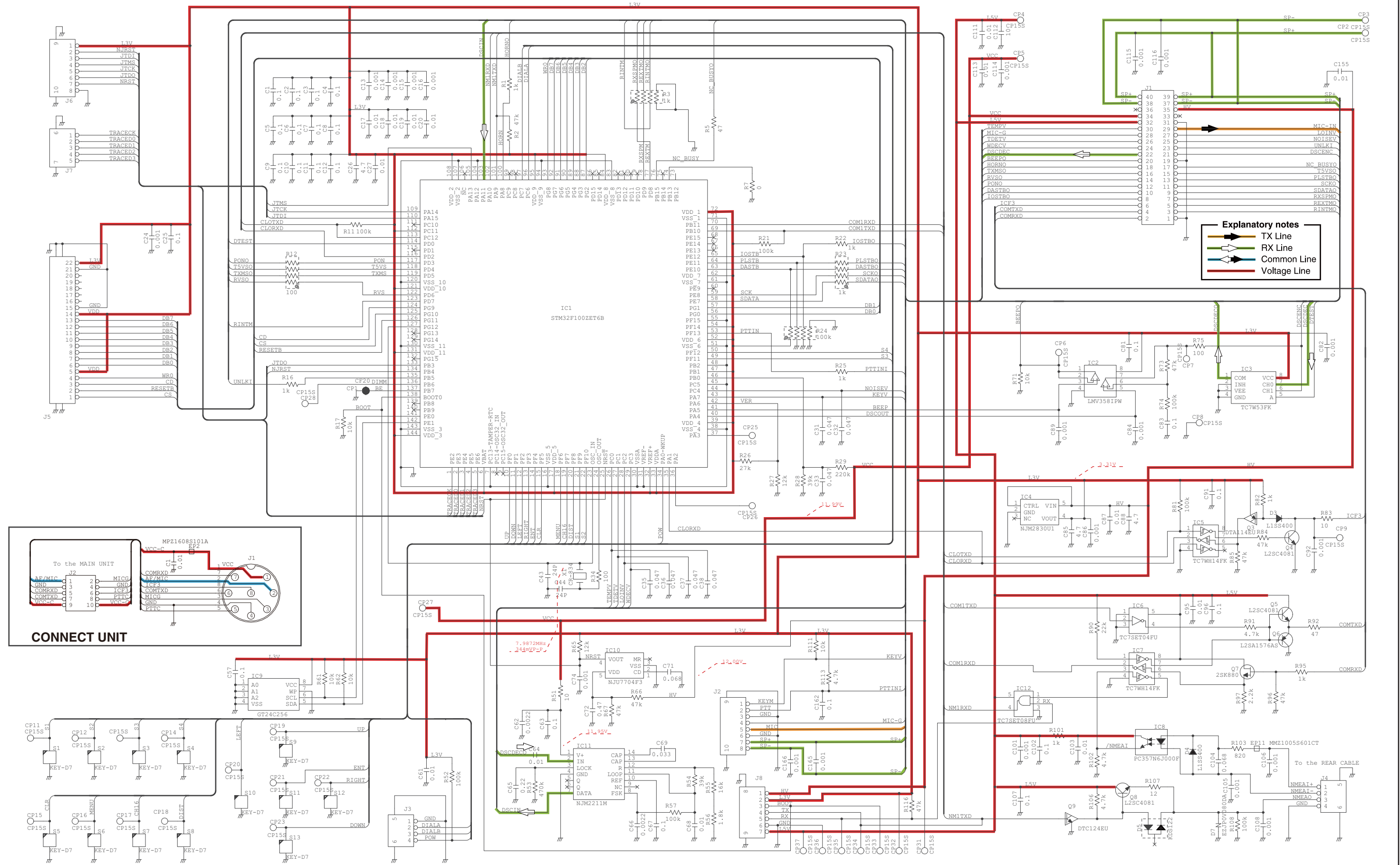


SECTION 9

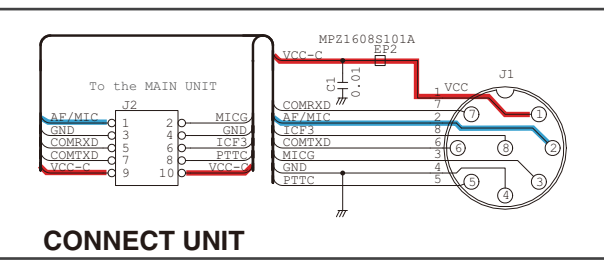
BLOCK DIAGRAM



• LOGIC UNIT

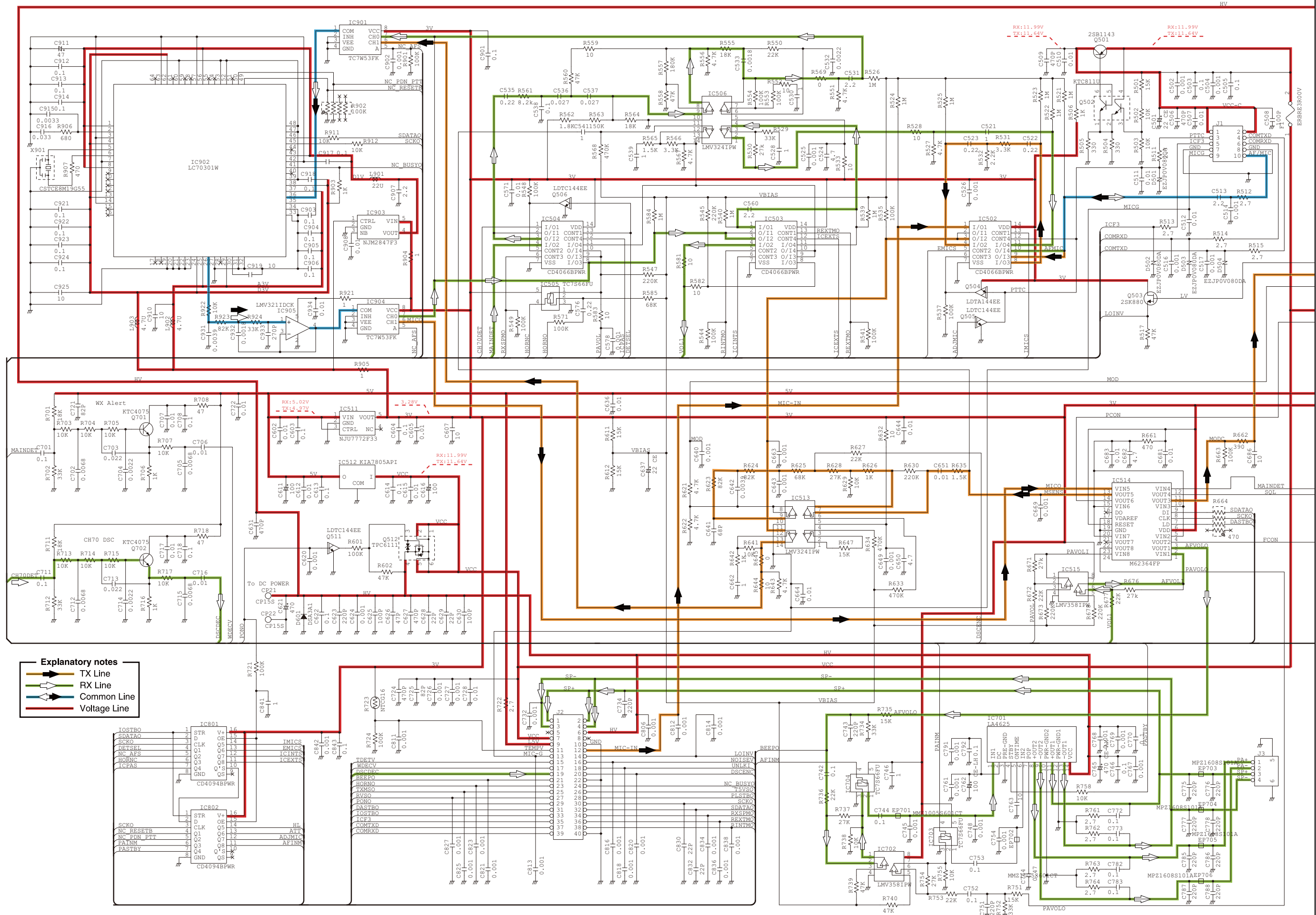


Explanatory notes
 TX Line
 RX Line
 Common Line
 Voltage Line

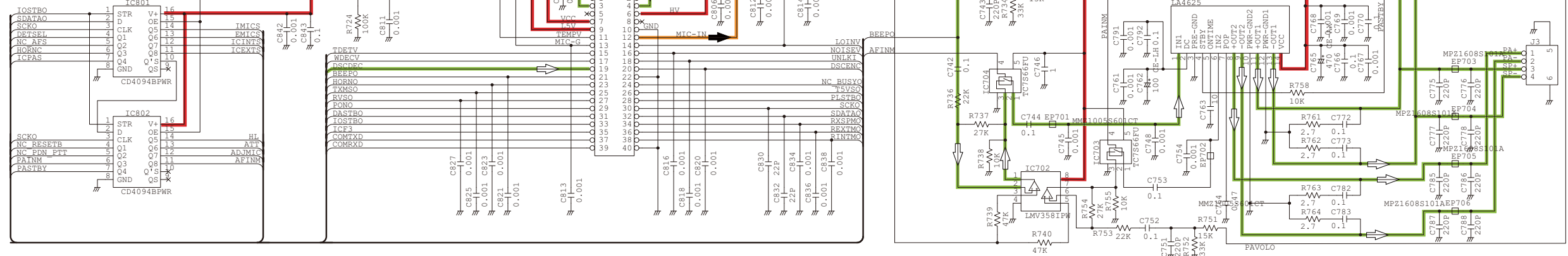


*: Refer to the PARTS LIST for the value and name of component.

• MAIN UNIT (1/2)

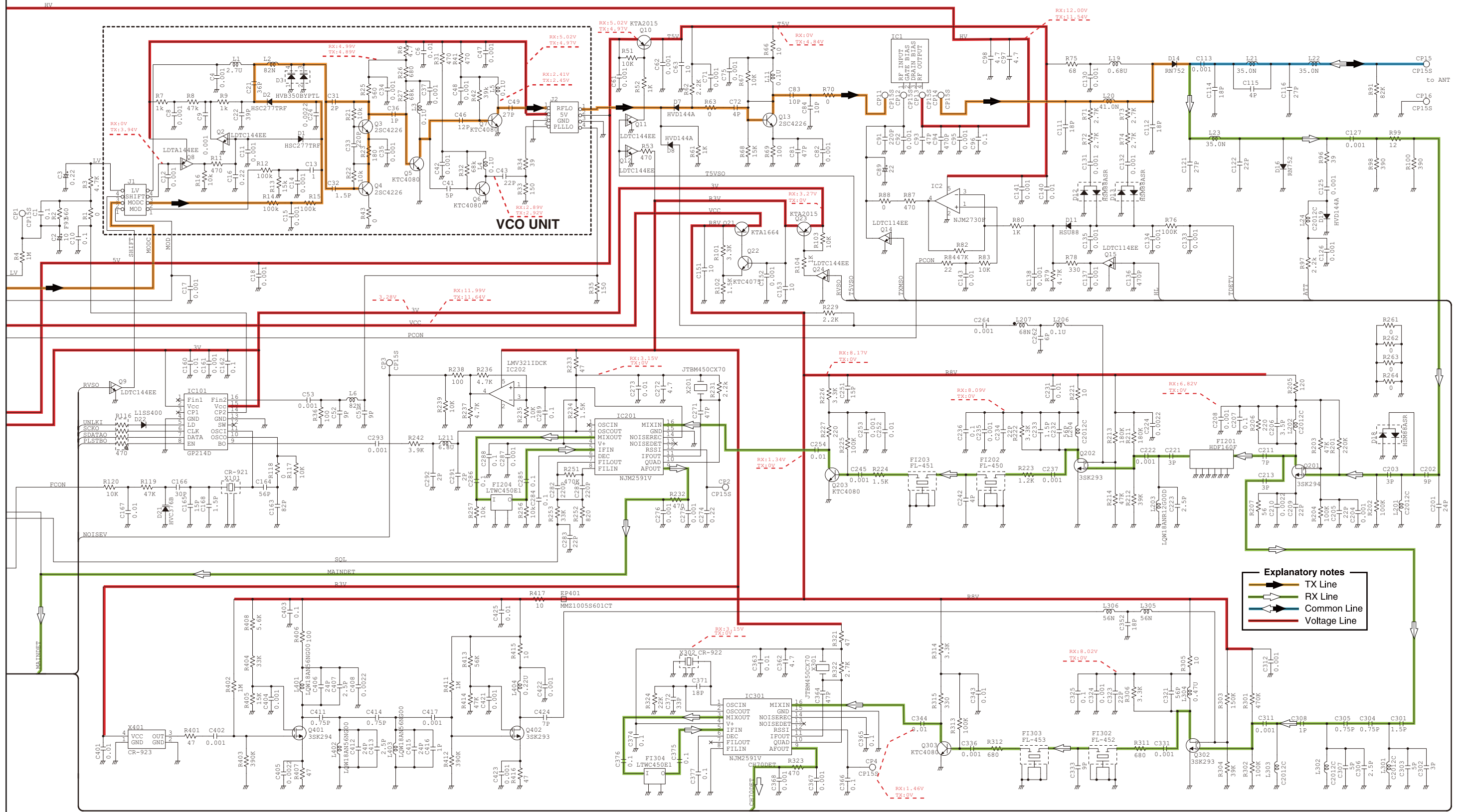


- Explanatory notes**
- TX Line
 - RX Line
 - Common Line
 - Voltage Line



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

• MAIN UNIT (2/2)



Explanatory notes

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

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

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