

Prepared (also subject responsible if other)		No.		
EAB/RBI/R Per Helmersson		B5KAKRC131139-01		
Approved	Checked	Date	Rev	Reference
KI/EAB/RBI/R (P Helmersson)		2003-01-07	A	

## Exhibit 10 – Components, Tune Up

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- 1            2.1033 (c) (10) Function of Active Circuit Devices**
- 1.1           Printed Board RDU 1900 MHz GMSK/8-PSK ROA 219 5305/1**
- 1.1.1        Function Block LTU**

Product  
ROZ 104 033/1  
Revision PF1

Pos	Prod name/Des	Product number
V500	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
Z500	MICROCIRCUIT/REG LIN+ ADJ 1.8-20V +/-1% 500	RYT 113 6303/1
Z501	MICROCIRCUIT/74'74 AC SOP14 2xD FLIP-FLOP	RYT 318 0074/C
Z503	MICROCIRCUIT/MB15E07 PFV-ER	RYT 102 6057/1
Z504	OSCILLATOR/26.000MHZ	RTL 202 610/02
Z505	MICROCIRCUIT/74'04 LVC SSOP14 6x INVERTER	RYT 331 0004/C
Z506	MICROCIRCUIT/74'04 ACT TSSOP14 6x INVERTER	RYT 317 6004/22C
Z507	MICROCIRCUIT/74'04 ACT TSSOP14 6x INVERTER	RYT 317 6004/22C

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**1.1.2 Function Block DC/DC**

Product  
ROZ 104 016/1  
Revision B

Pos	Prod name/Des	Product number
N706	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
N709	MICROCIRCUIT/PWM CURR.-M 5.0V +/-1.5% 1MHz	RYT 113 6053/4
N710	MICROCIRCUIT/PWM CURR.-M 5.0V +/-1.5% 1MHz	RYT 113 6053/4
N711	MICROCIRCUIT/REG SW CON- 1.1-4.5V 300-1000H	RYT 113 6158/1
N712	MICROCIRCUIT/REG SW CON- 1.1-4.5V 300-1000H	RYT 113 6158/1
N713	MICROCIRCUIT/DC-DC CONV ADJ 1.1-VIN +/-1% 2	RYT 113 6236/1
N714	MICROCIRCUIT/LM431 ADJ REGULATOR	RYT 113 008/3C
N715	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
N716	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
N717	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
N718	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
N719	MICROCIRCUIT/SUP.V 2.93V L/NIN RESET	RYT 113 6166/2
N720	MICROCIRCUIT/VOLTAGE REG, INVERTING, -5V	RYT 113 256/C
N721	MICROCIRCUIT/REG LIN+ 12V +/-4.2% 500mA 2V	RYT 113 6041/2C
T701	TRANSFORMER/Planartransformer	REG 735 38/1
T702	TRANSFORMER/Planartransformer	REG 735 37/1
V702	OVERVOLTAGE ARRESTER/DIODE TS 36V 30A DO-214AB	RKZ 223 485/36
V703	OVERVOLTAGE ARRESTER/DIODE TS 36V 30A DO-214AB	RKZ 223 485/36
V704	RECTIFIER/SCH 40V 5.5A DPAK 0.51V	RKZ 323 6045/1
V705	RECTIFIER/SCHx2 30V 2x6A DPAK(TO252AA)	RKZ 323 6047/1
V706	RECTIFIER/SCHx2 30V 2x6A DPAK(TO252AA)	RKZ 323 6047/1
V707	DIODE/SWI 75V 0.25A SOT23	RKZ 123 612
V708	DIODE/SWI 75V 0.25A SOT23	RKZ 123 612
V710	DIODE/SWI 75V 0.25A SOT23	RKZ 123 612
V711	DIODE/SWI 75V 0.25A SOT23	RKZ 123 612
V712	DIODE/SWI 75V 0.25A SOT23	RKZ 123 612
V713	TRANSISTOR/NFET 30V 14A SO8 0.008ohm	RYN 123 6012/1
V714	TRANSISTOR/NFET 30V 14A SO8 0.008ohm	RYN 123 6012/1
V715	TRANSISTOR/NFET 30V 14A SO8 0.008ohm	RYN 123 6012/1
V716	TRANSISTOR/NFET 30V 14A SO8 0.008ohm	RYN 123 6012/1
V720	DIODE/SCH 20V 0.5A 0.39V SOD123	RKZ 323 6011/1
V721	DIODE/SCH 20V 0.5A 0.39V SOD123	RKZ 323 6011/1
V726	TRANSISTOR/NFET 100V 33A D2PAK 0.044_Ohm	RYN 123 6058/1
V727	TRANSISTOR/NFET 100V 33A D2PAK 0.044_Ohm	RYN 123 6058/1
V728	RECTIFIER/SCHx2 30V 2x15A D2PAK	RKZ 323 6012/3
V729	RECTIFIER/SCHx2 30V 2x6A DPAK(TO252AA)	RKZ 323 6047/1
V730	DIODE/DUAL SCHOTTKY 90V 6A DPAK	RKZ 323 485
V731	DIODE/DUAL SCHOTTKY 90V 6A DPAK	RKZ 323 485
V735	RECTIFIER/SCH 40V 5.5A DPAK 0.51V	RKZ 323 6045/1

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V736 REGULATOR DIODE/REG 12.0V 6% 0.2W SOT-23  
V741 DIODE/SWI 75V 0.25A SOT23

RKZ 223 01/18  
RKZ 123 612

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**1.1.3 Function Block Digital**

Product  
ROZ 104 015/1  
Revision C

Pos	Prod name/Des	Product number
D1	MICROCIRCUIT/PowerPC405GP 266MHz rev E	RYT 123 6091/4
D3	MICROCIRCUIT/NOR GATE,QUAD,74LVC08	RYT 331 0008/3C
D4	PROD. ADAPT. CIRCUIT/CPU-ASIC GARP II	ROP 101 1127/2
D5	MICROCIRCUIT/FLASH TB 2M16 90NS 3.3V I	RYT 118 6152/4
D6	MICROCIRCUIT/FLASH 8M16 150ns 3.3V E	RYT 118 6153/1
D20	PROD. ADAPT. CIRCUIT/TARAC_S+	ROP 101 617/4C
D21	PROD. ADAPT. CIRCUIT/TARAC_S+	ROP 101 617/4C
D22	MICROCIRCUIT/XCV50E-6 FPGA 1.8V	RYT 139 055/C
D23	MICROCIRCUIT/SDRAM CL2+3 16M16 133M 3.3V C	RYT 119 6142/5
D50	MICROCIRCUIT/74'04 LVC SSOP14 6x INVERTER	RYT 331 0004/C
D51	MICROCIRCUIT/75LBC175 QUAD LINE RECEIVER	RYT 109 110/2C
D52	MICROCIRCUIT/RS485 TRANSC HD x1 5V SOP8 /75	RYT 109 6071/1
D53	MICROCIRCUIT/RS485 TRANSC HD x1 5V SOP8 /75	RYT 109 6071/1
D54	MICROCIRCUIT/RS485 TRANSC HD x1 5V SOP8 /75	RYT 109 6071/1
D55	MICROCIRCUIT/RS485 TRANSC HD x1 5V SOP8 /75	RYT 109 6071/1
D58	MICROCIRCUIT/75LBC175 QUAD LINE RECEIVER	RYT 109 110/2C
D60	MICROCIRCUIT/74'74 LVC TSSOP14 2xD FLIP-FLO	RYT 331 0074/3C
D61	MICROCIRCUIT/74'74 LVC TSSOP14 2xD FLIP-FLO	RYT 331 0074/3C
D70	MICROCIRCUIT/LVDS LINE DRIVER x4 TSSOP16 /9	RYT 109 6181/2C
D71	MICROCIRCUIT/LVDS LINE RECEIVER x4 TSSOP16	RYT 109 6158/2C
D72	MICROCIRCUIT/74'244 LVC SSOP20 8x BUFFER NO	RYT 331 0244/C
D75	MICROCIRCUIT/SDRAM CL2+3 16M16 133M 3.3V C	RYT 119 6142/5
D76	MICROCIRCUIT/SDRAM CL2+3 16M16 133M 3.3V C	RYT 119 6142/5
D77	MICROCIRCUIT/SDRAM CL2+3 16M16 133M 3.3V C	RYT 119 6142/5
D81	MICROCIRCUIT/8584 I2C-BUS CONTROLLER	RYT 125 6010/C
D82	MICROCIRCUIT/74'00 LVC TSSOP14 4x 2-INP NAN	RYT 331 0000/3C
D83	MICROCIRCUIT/74'74 ALVC SOP14 2xD FLIP-FLOP	RYT 331 0074/2C
D84	MICROCIRCUIT/74'32 LVC TSSOP14 4x 2-INP OR	RYT 331 0032/3C
D85	MICROCIRCUIT/74'109 AC SOP16 2XJK FLIP-FLOP	RYT 318 0109/C
D86	MICROCIRCUIT/74LVC4245 8X TRANSCEIVER	RYT 331 2245/C
D87	MICROCIRCUIT/74'74 HC SOP14 2XD FLIP-FLOP	RYT 304 0074/C
D88	MICROCIRCUIT/74'08 ALVC TSSOP14 4x2-INP AND	RYT 331 6014/C
D89	MICROCIRCUIT/74'32 LVC TSSOP14 4x 2-INP OR	RYT 331 0032/3C
D90	MICROCIRCUIT/74'244 LVC SSOP20 8x BUFFER NO	RYT 331 0244/C
N50	MICROCIRCUIT/LT1016 VOLTAGE COMPARATOR	RYT 101 051/C
N51	MICROCIRCUIT/LT1016 VOLTAGE COMPARATOR	RYT 101 051/C
N52	RELAY/RELAY SLOID STATE 2FORM SMD	RAV 947 28/1
V1	LIGHT EMITTING DIODE/LED YELLOW 90-224mcd 20mA 4x3.	RKZ 433 681/4
V2	LIGHT EMITTING DIODE/LED RED 56-140mcd 20mA 4x3.8x4	RKZ 433 681/1

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V3	LIGHT EMITTING DIODE/LED YELLOW 90-224mcd 20mA 4x3.	RKZ 433 681/4
V4	LIGHT EMITTING DIODE/LED GREEN 90-180mcd 20mA 4x3.8	RKZ 433 681/5
V10	LIGHT EMITTING DIODE/LED Red 20mA 0.5-1.3mcd 1.6x3.	RKZ 433 606/3
V11	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
V12	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
V13	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
V14	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
V15	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
V16	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2
V17	DIODE/SCHx2 70V 70mA SOT23 Serial	RKZ 323 08/2

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**1.1.4 Function Block RCiF 1900 MHz**

Product  
ROZ 104 017/6  
Revision C

Pos	Prod name/Des	Product number
D5100	PROD. ADAPT. CIRCUIT/TARAC_S+	ROP 101 617/4C
D5103	MICROCIRCUIT/EEPROM 128K8 SPI 2.7-5.5V	RYT 118 6154/1
D5200	PROD. ADAPT. CIRCUIT/ASIC SPIRA	ROP 101 616/C
D5202	MICROCIRCUIT/74'157 LVC SSOP16 4x2 MULTIPLE	RYT 331 0157/C
N4507	PROD. ADAPT. CIRCUIT/ASIC QIM	ROP 101 1115/C
N4508	PROD. ADAPT. CIRCUIT/ASIC QIM	ROP 101 1115/C
N4601	MICROCIRCUIT/DUAL SIGMA-DELTA MODULATOR	RYT 120 6061/2
N4602	MICROCIRCUIT/DUAL SIGMA-DELTA MODULATOR	RYT 120 6061/2
N4603	MICROCIRCUIT/DUAL SIGMA-DELTA MODULATOR	RYT 120 6061/2
N4604	MICROCIRCUIT/DUAL SIGMA-DELTA MODULATOR	RYT 120 6061/2
N4901	MICROCIRCUIT/LM431 ADJ REGULATOR	RYT 113 008/3C
N4902	MICROCIRCUIT/LM431 ADJ REGULATOR	RYT 113 008/3C
T4501	TRANSFORMER/SMD TRANSFORMER 4:1	REG 135 55/1
T4502	TRANSFORMER/SMD TRANSFORMER 4:1	REG 135 55/1
V4500	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4501	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4502	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4503	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4700	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4701	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4702	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4703	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V4704	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V5200	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
Z4901	MICROCIRCUIT/201 MHz	RYT 901 6148/3
Z4902	MICROCIRCUIT/REG LIN+ 5.0V +/-0.5% 100mA 0.	RYT 113 6005/2C
Z5191	MICROCIRCUIT/74'541 HCT TSSOP20 8x BUS BUFF	RYT 310 6023/2C

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**1.1.5 Function Block MRRF 1900 MHz**

Product  
ROZ 104 018/6  
Revision D

Pos	Prod name/Des	Product number
D1000	MICROCIRCUIT/74'595 HCT TSSOP16 8B S-IN S/P	RYT 310 6031/2C
D2430	MICROCIRCUIT/TEMP SENSOR, SOT-23, LM50C	RYT 124 6009/C
N1000	PROD. ADAPT. CIRCUIT/ASIC NINJA	ROP 101 614/2
N1001	PROD. ADAPT. CIRCUIT/ASIC PENNY	ROP 101 612/2
N1003	MICROCIRCUIT/DC-2.8 GHz amplifier	RYT 101 6476/1
N1004	AMPLIFIER/SGA-6389	RYT 101 6414/1
N1005	MICROCIRCUIT/5 bit attenuator 0.5-2.5GHz	RYT 115 6033/1
N1006	AMPLIFIER/SGA-6389	RYT 101 6414/1
N1007	MICROCIRCUIT/SXA-289, MMIC AMPLIFIER	RYT 101 6413/2
N2000	MICROCIRCUIT/RF SYNT RX 1900	RYT 902 6005/2
N2100	MICROCIRCUIT/RF SYNT TX 1900	RYT 902 6006/2
N2200	MICROCIRCUIT/RF SYNT RX 1900	RYT 902 6005/2
N2300	MICROCIRCUIT/RF SYNT TX 1900	RYT 902 6006/2
N2400	MICROCIRCUIT/IC ASIC ULLA II	ROP 101 664/C
N2420	MICROCIRCUIT/LIN REG- 5.0V INV 15mA ADJ	RYT 113 6063/1
N2520	FILTER/1880MHz BP BW=30MHZ	RTN 202 709/02
N2620	FILTER/1880MHz BP BW=30MHZ	RTN 202 709/02
N2812	MICROCIRCUIT/OPAMP x2 +/-15V 4.5MHz	RYT 101 6076/1C
N2813	MICROCIRCUIT/ASIC LOKE	ROP 101 693
N2815	FILTER/1800MHZ	RTN 202 803/01
T1000	BALUN/1800 MHZ 200 OHM	REG 735 58/9
T1001	TRANSFORMER/SMD TRANSFORMER 4:1	REG 135 55/1
T1002	BALUN/1800 MHZ 200 OHM	REG 735 58/9
T1003	BALUN/1900 MHZ 200 Ohm	REG 735 58/16
T1004	BALUN/1900 MHZ 200 Ohm	REG 735 58/16
T1005	BALUN/1900 MHZ 200 Ohm	REG 735 58/16
T2520	TRANSFORMER/BALUN 50/50 OHM 1880 MHZ	REG 135 58/5
T2530	TRANSFORMER/SMD TRANSFORMER	REG 135 55/7
T2620	TRANSFORMER/BALUN 50/50 OHM 1880 MHZ	REG 135 58/5
T2630	TRANSFORMER/SMD TRANSFORMER	REG 135 55/7
V1001	TRANSISTOR/NPN DARLINGTON,SOT89,BCV49	RYN 121 6041/1
V1002	TRANSISTOR/NPN DARLINGTON,SOT89,BCV49	RYN 121 6041/1
V1003	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
V2410	TRANSISTOR/NPN DARLINGTON,SOT89,BCV49	RYN 121 6041/1
V2411	TRANSISTOR/NPN DARLINGTON,SOT89,BCV49	RYN 121 6041/1
V2800	TRANSISTOR/NPN DARLINGTON,SOT89,BCV49	RYN 121 6041/1
V2801	TRANSISTOR/NPN 30V 0.5A SOT23 Darlington	RYN 121 1607/1
X2540	FILTER/201MHz BP SAW	RTN 201 851/01
X2600	COAXIAL CONNECTOR/SMA-coax angled PCB/SMD low	RNT 403 054/003



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X2640	FILTER/201MHz BP SAW	RTN 201 851/01
X2803	FILTER/BP 160MHz SAW	RTN 201 768/02
Z1000	FILTER/BP 160MHz SAW	RTN 201 867/02
Z1001	FILTER/1880MHz BP SAW	RTN 201 404/01
Z1002	FILTER/1960MHz BP	RTN 202 1021/01
Z1103	FILTER/1960MHz BP	RTN 202 1021/01
Z2801	FILTER/1960MHz BP	RTN 202 841/02
Z2802	FILTER/1960MHz BP	RTN 202 841/02
Z4801	MICROCIRCUIT/160MHz	RYT 901 6156/1
Z4802	MICROCIRCUIT/REG LIN+ 5.0V +/-0.5% 100mA 0.	RYT 113 6005/2C

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## 1.2 Printed Board PBU 1900 GMSK/8-PSK ROA 219 5310/1

### 1.2.1 Function Block Booster

Product  
ROZ 104 91/1  
Revision T

Pos	Prod name/Des	Product number
D7700	MICROCIRCUIT/COMP x1 36V	RYT 101 083/C
D7701	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
D7702	MICROCIRCUIT/COMP x2 36V	RYT 101 6169/1
L7704	TRANSFORMER/	REG 256 2324
N7700	MICROCIRCUIT/LM431 ADJ REGULATOR	RYT 113 008/3C
N7701	MICROCIRCUIT/MOSFET DRIV. 4.5-13.2V 1.5A	RYT 113 6221/1
N7702	MICROCIRCUIT/MOSFET DRIV. 4.5-13.2V 1.5A	RYT 113 6221/1
N7703	MICROCIRCUIT/OPAMP R/R 1.8-23V	RYT 101 130/2C
N7704	MICROCIRCUIT/OPAMP R/R 1.8-23V	RYT 101 130/2C
N7705	MICROCIRCUIT/OPAMP R/R 1.8-23V	RYT 101 130/2C
N7706	MICROCIRCUIT/OPAMP R/R 1.8-23V	RYT 101 130/2C
N7707	MICROCIRCUIT/LM431 ADJ REGULATOR	RYT 113 008/3C
N7708	MICROCIRCUIT/MOSFET DRIV. 4.5-13.2V 1.5A	RYT 113 6221/1
N7709	MICROCIRCUIT/MOSFET DRIV. 4.5-13.2V 1.5A	RYT 113 6221/1
R7707	TEMPERATURE SENSOR/KTY13A	RYT 124 6001/2C
V7700	RECTIFIER/SCHx2 60V 15/30A 0.62V D2PAK C	RKZ 323 6046/1
V7701	TRANSISTOR/NFET 60V 42A D2PAK/TO263 0.028	RYN 123 24/1
V7702	TRANSISTOR/NFET 60V 42A D2PAK/TO263 0.028	RYN 123 24/1
V7703	TRANSISTOR/PFET 60V 30A D2PAK(TO263AB) 0.	RYN 122 657/2
V7704	TRANSISTOR/PFET 60V 30A D2PAK(TO263AB) 0.	RYN 122 657/2
V7705	RECTIFIER/SCHx2 30V 2x15A D2PAK	RKZ 323 6012/3
V7706	RECTIFIER/SCHx2 30V 2x15A D2PAK	RKZ 323 6012/3
V7707	TRANSISTOR/NFET 100V 9A DPAK(TO252AA) 0.2	RYN 123 6016/1
V7708	DIODE/SWI 75V 0.25A SOT23	RKZ 123 612
V7709	TRANSISTOR/PNP 100V 0.1A SOT223	RYN 120 615/1
V7710	DIODE/DIODE 20V 0.1A SOT23	RKZ 123 641/1
V7711	REGULATOR DIODE/REG 27.0V 7% 0.2W SOT-23	RKZ 223 01/26
V7712	TRANSISTOR/SIL.AF TRANSIST.NPN, SOT23	RYN 121 6068/1
V7713	TRANSISTOR/SIL.AF TRANSIST.NPN, SOT23	RYN 121 6068/1
V7714	TRANSISTOR/SIL.AF TRANSIST.NPN, SOT23	RYN 121 6068/1
V7715	TRANSISTOR/SIL.AF TRANSIST.NPN, SOT23	RYN 121 6068/1
V7716	TRANSISTOR/SIL.AF TRANSIST.NPN, SOT23	RYN 121 6068/1
V7717	REGULATOR DIODE/REG 5.6V 7% 0.2W SOT-23	RKZ 223 01/10
V7718	REGULATOR DIODE/REG 5.6V 2% 0.2W SOT-23	RKZ 223 01/40
V7719	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7720	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7721	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7722	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1

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V7723	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7724	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7725	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7726	DIODE/DIODE 20V 0.1A SOT23	RKZ 123 641/1
V7727	REGULATOR DIODE/REG 12.0V 6% 0.2W SOT-23	RKZ 223 01/18
V7728	REGULATOR DIODE/REG 3.9V 5% 0.2W SOT-23	RKZ 223 01/6
V7729	REGULATOR DIODE/REG 10.0V 6% 0.2W SOT-23	RKZ 223 01/16
V7730	DIODE/DIODE 80V 150mA SOT23 BAV70	RKZ 123 642/1
V7731	TRANSISTOR/NPN 100V 1A SOT-223 BCP56-16	RYN 121 637/2
V7732	REGULATOR DIODE/REG 15.0V 5% 0.2W SOT-23	RKZ 223 01/20
V7736	RECTIFIER/SCHx2 30V 2x15A D2PAK	RKZ 323 6012/3
V7739	TRANSIENT PROTECTOR/TVS-Bi 33V 36-41V 1.5KW DO214A	RKZ 223 606/33
Z7700	MICROCIRCUIT/PW-CONTROLLER	RYT 113 006/4C
Z7701	MICROCIRCUIT/PW-CONTROLLER	RYT 113 006/4C

Prepared (also subject responsible if other)		No.		
EAB/RBI/R Per Helmersson		B5KAKRC131139-01		
Approved	Checked	Date	Rev	Reference
KI/EAB/RBI/R (P Helmersson)		2003-01-07	A	

**1.2.2 Function Block PA Linearisation GMSK/8-PSK PBU1900**

Product  
ROZ 104 098/1  
Revision S

Pos	Prod name/Des	Product number
N7301	MICROCIRCUIT/5 bit attenuator 0.5-2.5GHz	RYT 115 6033/1
N7302	MICROCIRCUIT/attenuator AA106-86	RYT 115 6032/1
N7303	MICROCIRCUIT/SXA-289, MMIC AMPLIFIER	RYT 101 6413/2
N7304	MICROCIRCUIT/74'595 HCT TSSOP16 8B S-IN S/P	RYT 310 6031/2C
N7306	MICROCIRCUIT/74'595 HCT TSSOP16 8B S-IN S/P	RYT 310 6031/2C
N7401	MICROCIRCUIT/EEPROM, SPI, 32Kx8b, 2MHz, 2.5	RYT 118 2016/C
N7402	MICROCIRCUIT/74'595 HCT TSSOP16 8B S-IN S/P	RYT 310 6031/2C
N7403	MICROCIRCUIT/74'4051 HCT SSOP16 8-CH ANALOG	RYT 310 6017/C
N7404	REGULATOR/REG LIN+ 5.0V +/-8% 1A 0.8V	RYT 113 6013/3
N7407	MICROCIRCUIT/74'139 LVC TSSOP16 2x DECODER	RYT 331 0139/3C
V7401	DIODE/SW1x2 70V .2A SOT23 Common_Cat	RKZ 123 03/3
V7402	DIODE/SW1x2 70V .2A SOT23 Common_Cat	RKZ 123 03/3

Prepared (also subject responsible if other)		No.		
EAB/RBI/R Per Helmersson		B5KAKRC131139-01		
Approved	Checked	Date	Rev	Reference
KI/EAB/RBI/R (P Helmersson)		2003-01-07	A	

**1.2.3 Function Block PA, PBU 1900**

Product  
ROZ 104 097/1  
Revision  
AN

Pos	Prod name/Des	Product number
M7100	ISOLATOR/1930 to 1990 MHz	UNH 102 3003/02
M7101	CIRCULATOR/PILL,1930-1990MHZ	KRY 101 1540/2
N7102	MICROCIRCUIT/OPAMPx2 2.7V R/R 5.5MHz	RYT 101 6331/2
N7104	MICROCIRCUIT/TEMP. SENSOR FAHERNHEIT	RYT 124 6015/1
N7105	MICROCIRCUIT/OPAMP x2 +/-15V 4.5MHz	RYT 101 6076/1C
N7106	ATTENUATOR/	REP 015 113
N7107	MICROCIRCUIT/OPAMP x2 +/-15V 4.5MHz	RYT 101 6076/1C
V7100	DIODE/SCHx2 20V 5mA SOT363 RF Schot	RKZ 323 6059/1
V7103	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7104	TRANSISTOR/PNP DARLINGTON 40V 300mA SOT-2	RYN 120 653/1
V7105	DIODE/SCHx2 20V 5mA SOT363 RF Schot	RKZ 323 6059/1
V7106	TRANSISTOR/PNP 45V 100mA SOT23 hFE250-460	RYN 120 614/1
V7107	TRANSISTOR/RF POWER FET MRF281Z	RYN 123 683/1
W7100	CIRCULATOR/1.960GHz	UNK 102 124/02
W7101	DIRECTIONAL COUPLER/1A1305-20	UND 106 049/1
V7101	TRANSISTOR/BLF2043	RYN 123 1622/1
V7102	TRANSISTOR/RF Power 1.8 to 2.0 GHz	RYN 123 1631/1

Prepared (also subject responsible if other)		No.		
EAB/RBI/R Per Helmersson		B5KAKRC131139-01		
Approved	Checked	Date	Rev	Reference
KI/EAB/RBI/R (P Helmersson)		2003-01-07	A	

## 2            **2.1033(c)(9) Tune-Up Procedure**

All the necessary adjustments will be set in the factory, and no adjustments are needed. The output power level is remotely controlled by the Base Station Controller (BSC). If the TRX is not able to maintain the requirements for power output, frequency stability, etc an alarm is sent to the BSC. On severe faults the TRX will disable transmission.

Prepared (also subject responsible if other)		No.		
EAB/RBI/R Per Helmersson		B5KAKRC131139-01		
Approved	Checked	Date	Rev	Reference
KI/EAB/RBI/R (P Helmersson)		2003-01-07	A	

### 3            **2.1033(c)(9,10) Power Tune-Up – Power Limiting**

The TRX measures the output power at its output connector via a RF-detector and the detected value is used by the power loop control block to steer two variable gain amplifiers between the modulator and the power amplifier. The transmitter in the TRX contains three synthesized oscillators. One PLL gives a 160 MHz signal to the I/Q modulator. The two other generate a 1770 to 1830 MHz signal to the mixer where the modulated signal is converted to the transmit frequency. Two oscillators are needed in frequency hopping mode, one is retuning while the other is active. All three synthesized oscillators have a reference of 13 MHz, which is downmixed by 2, generated in a central synthesized oscillator (PLL) of 26 MHz in the LTU part of the TRU. This PLL frequency reference is extracted from the 13 MHz signal which is generated and distributed, by the DXU (Distribution Switch Unit), to all TRU:s in the basestation. The frequency reference 13 MHz in the DXU is generated in a voltage controlled oscillator placed in an oven together with and phase-locked to a long term stable oven heated oscillator. As an option the oscillator can be phase-locked to the incoming PCM-link frequency or an incoming GPS-link frequency.