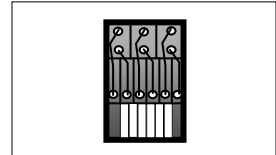


Earl J. Lum
+1-650-430-2221
elum@ejlwireless.com



**Ericsson GSM/W-CDMA 900MHz RF Module, 80W
KRC 118 62/1 R1C
Model RUS01 B8**

November 2011



Entire contents © 2011 EJL Wireless Research LLC. All Rights Reserved. Reproduction of this publication in any form without prior written permission is strictly forbidden and will be prosecuted to the fully extent of US and International laws. The transfer of this publication in either paper or electronic form to unlicensed third parties is strictly forbidden. The information contained herein has been obtained from sources EJL Wireless Research LLC deems reliable. EJL Wireless Research disclaims all warranties as to the accuracy, completeness or adequacy of such information. EJL Wireless Research LLC shall have no liability for errors, omissions or inadequacies in the information contained herein or for the interpretation thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	6
Active/Passive Component Summary	6
Important Note:	6
CHAPTER 1: ERICSSON RBS6000 BTS SYSTEM	7
Overview of RBS6101/6102/6201/6202 Product Offering	7
CHAPTER 2: RUS MECHANICAL ANALYSIS	9
Mechanical Analysis.....	9
CHAPTER 3: RUS TRX SUBSYSTEM.....	19
Digital Processor and TRx PCB	19
Area A: RUS Baseband Signal Processing	22
Area B: RUS Receiver RF/IF Downconversion	25
Area B1: RUS Secondary Receiver/Analog Cross Connect.....	26
Area B2: RUS Receiver A/D Converter.....	28
Area B3: RUS Receiver IF Downconverter.....	30
Area B4: RUS Receiver RF Downconverter/System Timing	33
ROR 101 0007 1 R2B.....	36
Area C: RUS Receiver Low Noise Amplifier	41
Area D: RUS Transmitter	46
Area E: Main RF Power Amplifier Tx Sampling Circuit	50
Area F: Secondary RF Power Amplifier Tx Sampling Receiver.....	53
Area G: Main TRx Power Supply	55
Area H: Secondary TRx Power Supply	59
PA9F11 Frequency Synthesizer Module.....	62
PA9F16 Frequency Synthesizer Module.....	64
PA9F17 Frequency Synthesizer Module.....	66
PA9F26 Frequency Synthesizer Module.....	68
CHAPTER 4: RUS RF AMPLIFIER SUBSYSTEM	70
RUS RF Power Amplifier Shield.....	80
RUS RF Power Amplifier Heat Sink.....	81
CHAPTER 5: RUS DUPLEXER CAVITY FILTER RF SUBSYSTEM.....	83
RFA Connector PCB	89
RFB Connector PCB	97
RUS Duplexer Filter Analysis.....	99
APPENDIX A - PASSIVE CASE SIZE ANALYSIS.....	104
APPENDIX B - ACTIVE COMPONENT MARKET SHARE ANALYSIS	108

TABLES

Table 1: Area A Bill of Materials	23
Table 2: Area B1 Bill of Materials	27
Table 3: Area B2 Bill of Materials	29
Table 4: Area B3 Bill of Materials	32
Table 5: Area B4 Bill of Materials	35
Table 6: ROR 101 0007 1 R2B Bill of Materials.....	40
Table 7: Area C1 Bill of Materials	44
Table 8: Area C2 Bill of Materials	45
Table 9: Area D Bill of Materials	49
Table 10: Area E Bill of Materials	52
Table 11: Area F Bill of Materials.....	54
Table 12: Area G Bill of Materials	56
Table 13: Area H Bill of Materials	60
Table 14: PA9F11 Module Bill of Materials	63
Table 15: PA9F16 Module Bill of Materials	65
Table 16: PA9F17 Module Bill of Materials	67
Table 17: PA9F26 Module Bill of Materials	69
Table 18: RUS RF Power Amplifier Area A Bill of Materials	77
Table 19: RUS RF Power Amplifier Area B Bill of Materials	78
Table 20: RFA PCB Bill of Materials.....	96
Table 21: RFB PCB Bill of Materials.....	98
Table 22: Passive Component Case Size Distribution by System Subsection	105
Table 23: Identified Passive Component Supplier Distribution by System Subsection	106
Table 24: Active/Passive Component Distribution by System Subsection.....	107
Table 25: Active Semiconductor/Component Vendor Distribution by System Subsection	109

EXHIBITS

Exhibit 1: Ericsson RBS6201 Indoor Macro BTS System	8
Exhibit 2: Ericsson RUS 01 B8 System Block Diagram.....	8
Exhibit 3: RUS Front and Rear View	9
Exhibit 4: RUS Top View	10
Exhibit 5: RUS Bottom View with Dimensions	11
Exhibit 6: RUS Bottom View, Power Amplifier & Duplexer Filter Location	12
Exhibit 7: RUS Bottom View, Duplexer Filter Removed.....	13
Exhibit 8: TRx RF Shield External View	14
Exhibit 9: TRx RF Shield Internal View	15
Exhibit 10: RUS Housing, Internal View, TRx Side	16
Exhibit 11: RUS Housing, Internal View, Power Amplifier/Duplexer Side.....	17
Exhibit 12: RF Coaxial Cable, RF Power Amplifier-Duplexer Filter	18
Exhibit 13: RUS TRx PCB, Top View.....	20
Exhibit 14: RUS TRx PCB, Bottom View.....	21
Exhibit 15: Area A Component Diagram	22
Exhibit 16: Area B Map	25
Exhibit 17: Area B Signal Diagram	25
Exhibit 18: Area B1 Component Diagram	26
Exhibit 19: Area B2 Component Diagram	28
Exhibit 20: Area B3 Component Diagram	30
Exhibit 21: Area B3 Block Diagram.....	31
Exhibit 22: Area B4 Component Diagram	33
Exhibit 23: Area B4 Block Diagram.....	34
Exhibit 24: ROR 101 0007 1 R2B Component Diagram.....	37
Exhibit 25: ROR 101 0007 1 R2B Block Diagram	37
Exhibit 26: ADL5562 Die Photo	38
Exhibit 27: ADS5493 Part Number Identification Die Photo.....	38
Exhibit 28: ADS5493 Die Photo.....	39
Exhibit 29: Area C1/C2 Component Diagram	41
Exhibit 30: Area C1 Rx1 Path Block Diagram	42
Exhibit 31: RF Power Divider Component	43
Exhibit 32: Area D Component Diagram.....	46
Exhibit 33: Area D Block Diagram	47
Exhibit 34: RF Balun Component.....	47
Exhibit 35: RF Coupler Component.....	48
Exhibit 36: Area E Component Diagram	50
Exhibit 37: Area E Block Diagram.....	51
Exhibit 38: Area F Component Diagram	53
Exhibit 39: Area G Component Diagram.....	55
Exhibit 40: Area H Component Diagram.....	59
Exhibit 41: PA9F11 Module Component Diagram.....	62
Exhibit 42: PA9F16 Module Component Diagram.....	64
Exhibit 43: PA9F17 Module Component Diagram.....	66
Exhibit 44: PA9F26 Module Component Diagram.....	68
Exhibit 45: RUS RF Amplifier Mounting Diagram.....	70
Exhibit 46: RUS RF Power Amplifier	71
Exhibit 47: RUS RF Power Amplifier Tx Path Block Diagram	72
Exhibit 48: RUS RF Power Amplifier Area A Component Diagram.....	72
Exhibit 49: RUS RF Power Amplifier Area B Component Diagram.....	73
Exhibit 50: RUS RF Power Amplifier Construction, Exploded Side View	74
Exhibit 51: RUS RF Power Amplifier Baseplate	75
Exhibit 52: RUS RF Power Amplifier Baseplate, Side View.....	75
Exhibit 53: RUS RF Power Amplifier PCB, Bottom View.....	76
Exhibit 54: RUS RF Power Amplifier Shield, Internal View.....	80
Exhibit 55: RUS RF Power Amplifier Heat Sink, Top View.....	81
Exhibit 56: RUS RF Power Amplifier Heat Sink, Bottom View.....	81
Exhibit 57: RUS RF Power Amplifier Heat Sink, Side View.....	82
Exhibit 58: RUS Duplexer Filter, Top View.....	83
Exhibit 59: RUS Duplexer Filter, Bottom View.....	84
Exhibit 60: RUS Duplexer Filter RF Shield, Top View.....	85

Exhibit 61: RUS Duplexer Filter RF Shield, Bottom View	85
Exhibit 62: RUS Duplexer VSWR Shield	86
Exhibit 63: RUS Duplexer RF Connector Placement	87
Exhibit 64: RUS Duplexer 7/16 DIN Connector Launch Design	87
Exhibit 65: RUS Duplexer Filter Tx/Rx Paths	88
Exhibit 66: RFA PCB Component Diagram	89
Exhibit 67: Metal Divider	89
Exhibit 68: RFA/RFB PCBs, Top View	90
Exhibit 69: RFA/RFB PCBs, Bottom View	91
Exhibit 70: AD8342 Part Number/Logo Identification Die Photo	92
Exhibit 71: AD8342 Die Photograph	92
Exhibit 72: AD8338 Logo Identification Die Photo	93
Exhibit 73: AD8338 Part Number Identification Die Photo	93
Exhibit 74: AD8338 Die Photo	94
Exhibit 75: RFA VSWR Monitoring Circuit	95
Exhibit 76: RFB PCB Component Diagram	97
Exhibit 77: Duplexer Tx Filter Path with Waveguide Coupler	99
Exhibit 78: Duplexer Tx Filter Path with Waveguide Coupler w/Resonators Removed	99
Exhibit 79: Waveguide Slot Dimensions	100
Exhibit 80: Waveguide Coupler, Top View	100
Exhibit 81: Waveguide Coupler, Side View	100
Exhibit 82: Large Resonator Assembly for Tx Path of RXA	101
Exhibit 83: Medium/Small Resonators for Rx Path of RFA and Rx Path of RFB	102
Exhibit 84: RFB Rx Path Resonator	102
Exhibit 85: RFA Rx Path Resonator	103
Exhibit 86: RFA Tx Path Resonator	103
Exhibit 87: Passive Component Case Size Distribution	104
Exhibit 88: Identified Passive Component Market Share by Vendor	107
Exhibit 89: Active Semiconductor Component Share	108
Exhibit 90: High Pin Count IC vs. Discrete	111
Exhibit 91: Active Semiconductor Market Share by Vendor	112
Exhibit 92: High Pin Count (64+) Active Semiconductor Market Share by Vendor	113