

MEASUREMENT AND TECHNICAL REPORT

ORTEL CORPORATION
 2015 West Chestnut Street
 Alhambra, CA 91803-1542

DATE: 10 August 1998

This Report Concerns:	Original Grant: <input checked="" type="checkbox"/>	Class II Change: <input type="checkbox"/>
Equipment Type:	CDMA Channel Selective Repeater, Models CDR1901 and CDR1912**	
Transition Rules Request per 15.37?	Yes: <input type="checkbox"/>	*No: <input type="checkbox"/>
(*) <i>FCC Part 2, Paragraphs 2.989 2.985, 2.991 and 2.993; and Part 24, Paragraph 24.238</i>		
<p>(**) CDR 1901: 1 CH x 2W or 1 CH x 4W or 1 Ch x 7.1W CDR 1912: 2 CH x 1W or 2 CH x 2W S/Ns for 1 CH x 7.1 W units: A band, EM121; B band, EM001; C band, EM119; D band, EM122; E/F band, EM120. S/N for 1 CH x 4W unit: EM006; S/N for 2 CH x 2W unit, EM110; S/N for 2 CH x 1W and 2 CH x 2W units, EM110</p>		
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1 GENERAL INFORMATION

1.1 Product Description

PRODUCT INFORMATION INFO

PRODUCT DESCRIPTION				
NAME, MODEL, SERIAL # OF EUT:		CDMA Channel Selective Repeater, Models CDR1901 and CDR1912 (S/Ns for 1 CH x 7.1 W units: A band, EM121; B band, EM001; C band, EM119; D band, EM122; E/F band, EM120. S/N for 1 CH x 4W unit: EM006; S/N for 2 CH x 2W unit, EM110; S/N for 2 CH x 1W and 2 CH x 2W units, EM110) NOTE: This unit has approval on A,B, and D bands (1 Ch x 7.1W, 1 CH x 4W, 2 Ch x 3.5 W, 2 Ch x 2W, 2CH x 1 W, 1CH x 2W CDF repeaters) on FCC ID: LB41901CDMA. This application is for the remaining bands.		
DESCRIPTION OF EUT:		CDMA Channel Selective Repeater		
Components of EUT				
Description	Model Number	Serial Number	FCC ID Number	
N/A				
OPERATING MODE(S):		Uplink and downlink modes		
I/O CABLES				
CONNECTION	Donor antenna	CONNECTION	Server antenna port	
SHIELD	Yes	SHIELD	Yes	
CONNECTORS	7/16	CONNECTORS	7/16	
TERMINATION TYPE	N/A	TERMINATION TYPE	N/A	
LENGTH	N/A	LENGTH	N/A	
REMOVABLE	No	REMOVABLE	No	
POWER CORDS				
UNIT:	Repeater			
MANUFACTURER:	Digi-key (P/N Q109-ND)			
SHIELDED:	Type SJT			
LENGTH:	8'			
POWER INTERFACE				
FREQUENCY/AC/DC VOLTAGE:		60 Hz / 120 Vac		
PHASES/CURRENT:		1 / 1.8		
OSCILLATOR FREQUENCIES				
FREQUENCY	EUT LOCATION	DESCRIPTION OF USE		
Determined by base station: reference signal and ± 70 MHz from reference signal.				
POWER SUPPLY				
DESCRIPTION	MANUFACTURER	MODEL #	SERIAL #	SWITCHING/LINEAR FREQ.
*AC/DC PS (internal)	Ortel	1473-001-001	--	--
DC/DC PS (internal)	Ortel	1474-001-001	--	100 KhZ

(*) AC/DC module contains VICOR power supply, Model VI-AIM-C1.

POWER LINE FILTERS				
MANUFACTURER	MODEL NO.	QTY.	LOCATION ON EUT	
Littlefuse	848003 (European P/N (FCC, UL approved)	1	Internal to AC/DC power supply	
CRITICAL EMI COMPONENTS		See BOM, Appendix G (Exhibit 5)		
DESCRIPTION OF ENCLOSURE:		Aluminum enclosure; Antenna gaskets: 1/32" thick commercial grade neoprene (40-50 shore hardness) door seal: Fermapor (K31-9020-5)		
INTERFACING AND/OR SIMULATORS PERIPHERAL EQUIPMENT:				
DESCRIPTION	MANUFACTURER	MODEL #	SERIAL #	FCC ID
--				
BLOCK DIAGRAM:		See Appendix K (Exhibit 4)		

1.2 Test Methodology

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

Test Performed: X 1. Conducted Emissions, FCC Part 2, Paragraphs 2.991 2.985 and 2.989 & Part 24 Paragraph 24.238
X 2. Radiated Emissions EN55022: 1992 Class B limit, 30 - 1,000 MHz, 10 meters
X 3. Radiated Emission per FCC Part 2, Paragraph 2.993, 1 - 10 GHz
4. Engineering evaluations

Both Conducted and radiated testing were performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8 - M1983. Radiated testing was performed at an antenna-to-EUT distance of 3 meters (1 - 20 GHz).

1.3 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV PRODUCT SERVICE
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 619 546 3999
Fax: 619 546 0364

The Test Site Data and performance comply with ANSI 63.4 and are registered with the FCC, 7435 Oakland Mills Rd, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

1.4 Part 2 Requirements

Production Quantity 2.983(c)- 20 per month

Frequency Stability 2.983(d)(10)- Operator's Manual, Appendices D and E, Section 1, General Information Section

Spur suppression 2.983(d)(II)- SAW filter for the IF frequency (70 MHz) and duplexer for the RF frequency band in both directions (Server & Donor ports) to filter out spurious products. Transmitting and Receiving (Tx/Rx) rejection specification is 72 dB minimum.

Limiting RF Power 2.983(d)(II)

Using Automatic Level Control (ALC) circuit to peak limit the output power to a specified level (38.5 dBm, 36 dBm, 33 dBm, etc.) Components and circuitry used for this function consist of Schottky detector and PIN diodes, Op-amps for video amplifier stage and digital components for Command and Control functions.

Power Rating 2.983(d)(4)

Function of Active Circuit Devices 2.983(d)(6)

Schematics 2.983(d)(7)

User Manual CDR1901 2.983(d)(8)

User Manual CDR1912 2.983(d)(8)

Photograph, Internal/External 2.983(g)

BOM

Product Specifications (2 Channel Repeater)

Product Specifications (Channel Selective Repeater)

Appendix L (Exhibit 10)

Appendix C (Exhibit 5)

Appendix D (Exhibit 8)

Appendix E (Exhibit 8)

Appendix F (Exhibits 3 & 9)

Appendix G (Exhibit

Appendix H (Exhibit

Appendix I (Exhibit

7.1 W CDMA Repeater DC Power Dissipation



07/10/98

MODULE	QTY	Voltage & Current	PWR PER MODULE	TOTAL POWER
DL LNA	1	11V/.17A	1.9 W	1.9 W
UL LNA ██████████ w/ DIV. RX	1	11V/.2A	2.2 W	2.2 W
Channelizer	2		7.6W	15.2 W
DL PA	1	12V/9A	108 W	108 W
UL PA	1	12V/2A	24 W	24 W
Controller	1		1 W	1 W
DC-DC	1		27 W	27 W
AC-DC	1		5.5 W	5.5 W
TOTAL				185 W

POWER RATING

POWER RATING

Uplink LNA & DIV RX

REPORT NO. S8310 FCCI ID: LB41900CDMA

Bill Of Materials for 9372x2.sch on Tue Jul 28 18:36:57 1998

Reference	Qty	Manufacturer	MFG's P/N	Description
L15-16	2	MURRATA ELECTRONICS	BLM11B102SPT	FERRITE, CHIP, SMD, EMI FILTER, 1K OHM
RF1-3	3	M/A-COMM INC.	2052-1201-02	CONN, FLANGE MOUNT RECEPTACLE
C59 C65	2	ATC	ATC100A120CP150	CAP, CERAMIC CHIP, 150V, 12pF
C71	1	GARRETTE	VJ0805A220JXBA	Cap, ceramic chip, 100 V, +/- 5%, NPO, Ni barrier, 22pF
J3	1	ADVANCED CIRCUIT	SJ 100-6-1 KAT	JUMPER, FLEXIBLE 1" 6 -LEADS
U6	1		AK802M2-12	GaAs MMIC SPDT FET Switch W/TTL Driver, SO8
C51-52	2	NEMCO	LSR22/25DK200	CAP, TANTALUM, SM, 22uF, 10%, 25V
R15	1	ANY	RK73H2HTE12R4F	Res, chip, 1/2W, 100 ppm, 1%, 12.4ohm, 2010
L17	1	COILCRAFT	DO1608C-104	INDUCTOR, POWER, +/-20%, 100 uH
U5	1	ARROW	LT1074IT	REGULATOR, SWITCHING
U9	1	MARSHALL IND.	LT1117CST	REG, POS LO-DROPOUT, 800mA
U8	1	LINEAR TECH.	LTC1261CS8-4	REGULATOR, VOLTAGE INVERTER, SWITCHED CAPACITOR
D1	1	HAMILTON	MBR735	DIODE, RECTIFIER, SCHOTTY, CATCH
U1-4	4		NE34018	XSTR, HJ-FET, GaAs, L/S BAND LOW NOISE AMP, NE34018, SOT-343
VR1-2	2	DIGI-KEY	3224W-502ECT	POT, TOP ADJUST, SMT, 5K OHM, 3224W
J2	1		SSW-104-24-G-S-R	SOCKET STRIP, 1X4, R/A, .1"L/S, THRU HOLE A
J1	1		FCC17E09PA-450	CONN. 9 D-SUB PCB R/A FILTERED 1000pF, .318" FOOTPRINT
L11 L18	2	TOKO	380LB-270J	INDUCTOR, CHIP, TYPE 32CS, 5%, 27uH
L10 L13	2	TOKO	380LB-4R7K	INDUCTOR, CHIP, TYPE32CS, 10%, 4.7uH
C54	1	DIGI-KEY	PCE3022CT-ND	CAP, ALUMINUM ELEC, SMD, 50V, 10uF
C41-42 C44 C53	4	DIGI-KEY	ECE-V1AA101SR	CAP, Elec, SMD, 10V, 100uF, vertical, 6.3x5.4
R3 R11	2	ROHM	MCR10JW000	Res, chip, 1/10 W, 200 ppm, 5%, 0 ohm
F1	1	LITTELFUSE	R459001	FUSE, VERY FAST ACTING, SMD, 1A
Q1	1	ANY	IRFD9024	Transistor, Hexfet, IRFD9024, DIP4
C38-40	3	JACO	VJ0805A470DXBA	CAP, CERAMIC CHIP, 100V, 47 pF, NPO Ni BAR.
C32-34 C50	4	JACO	VJ0805A101JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni bar. 100pF
C2 C9 C13-14 C21 C25	6	JACO	VJ0805A102JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni bar. 1000 pF
C5 C11 C17 C23	6	JACO	VJ0805A103JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni barrier, .01uF
C29 C37	1	JACO	VJ0805A104JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni barrier, .1uF
C28 C43 C47-49	6	JACO	VJ0805A151JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni bar. 150 Pf
C55	1	JACO	VJ0805A560BxB	CAP, CHIP, 0805, 100V, +/-0.10pF, 56pF
C6 C18	2	JACO	VJ0805A470DXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni barrier, 47pF
C1 C4 C8 C12	7	GARRETTE	VJ0805A220JXBA	Cap, ceramic chip, 100 V, +/- 5%, NPO, Ni barrier, 22pF
C20 C24 C72	1	JACO	VJ0805A470DXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni barrier, 47pF
C45-46 C56-58	8	JACO	VJ0805A560BxB	CAP, CHIP, 0805, 100V, +/-0.10pF, 56pF
C60-62	1	VITRAMON	1812CS-273XKBC	INDUCTOR, CHIP, 27uH
C35-36	2	FUTURE ELEC.	1008CS-471XKBC	INDUCTOR, CER BASE, 470 nH
L9	1	COILCRAFT	RK73H2BT1210F	Res, Chip, 1/8 W, 100 ppm, 1%, 121 ohm
L12	1	GARRETT	RK73H2BT1242F	Res, chip, 1/8 W, 100 ppm, 12.4K
R21	1	GARRETT	RK73H2BT1821F	Res, chip, 1/8 W, 100 ppm, 1%, 1.82k
R18	1	GARRETT	RK73H2BTE3321F	Res, chip, 1/8 W, 100 ppm, 1%, 3.32k
R19	1	GARRETT	RK73H2BT3920F	Res, chip, 1/8 W, 100 ppm, 1%, 392ohm
R20	1	GARRETT	RK73H2BT6191F	Res, chip, 1/8 W, 100 ppm, 1%, 6.19K
R22	1	GARRETT	ECA-1AHG102	CAP, ELEC, 10V, 20%, axial lead, 1000uF, 10x12.5
R17	1	GARRETT	ECA-1CHG221	CAP, ELEC, 16V, 20%, axial lead, 220uF, 6.3X11
C30 C63	2	DIGIKEY P5521-ND	RM73Z2AT	Res, Chip, 1/10 W, ZERO OHM JUMPER
C27 C31	2	DIGIKEY P5531-ND	RK73H2A1002F	Res, chip, 1/10 W, 200 ppm, 1%, 10K ohm
R7 R14	2	GARRETT\IEU	RK73H2A1500F	Res, chip, 1/10 W, 200 ppm, 1%, 150 ohm
R23	1	GARRETT	RK73H2ATE3480F	Res, chip, 1/10 W, 200 ppm, 1%, 348, 0805
R4 R12	2	GARRETT		
R2 R10	2	GARRETT		

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uplma Uplink LNA + DIV RX

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R5 R13	2	GARRETT	RK73H2A7500F	Res, chip, 1/10 W, 200 ppm, 1%, 750, 0805
R16	1	GARRETT\IEU	RK73H2A????F	Res, Chip, 1/10 W, ??? ppm, 1%, ????
R1 R6 R8-9	4	GARRETT\IEU	RK73H2A????F	Res, Chip, 1/10 W, ??? ppm, 1%, ????
C3 C7 C10	8		ECE-V1EA4R7R	CAP, Aluminum Electro, SMD , 25V, 4.7uF, vertical, 4X5.4
C15-16 C19 C22				
C26				
L1-8	8	INSIGHT ELEC.	LL2012-F22NK	INDUCTOR,CHIP,MULTILAYER, 10%, 22nH
L14 L26	2	INSIGHT ELEC.	LL2012-F1N8S	INDUCTOR,CHIP,MULTILAYER, 10%, 1.8nH
L27-28	2	INSIGHT ELEC.	LL2012-F2N7K	INDUCTOR,CHIP,MULTILAYER, 10%, 2.7nH
U7	1	TRANS-TECH	TT6P3-1857F-1532	FILTER, BANDPASS, 3 POLE, 1857.5 MHz.
Y1	1	MF ELECTRONICS	M1258-4MHZ	CRYSTAL, OSC CLOCK W/TTL 4.000MHZ
X1-12	12			

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REPORT NO. S8310 FCCI ID: LB41900CDMA

Bill Of Materials for 9316c.sch on Tue Jul 28 18:26:07 1998

Reference	Qty	Manufacturer	MFG's P/N	Description
X9	1			-30DB COUPLER , COPPER SHAPE ONLY
L11	1	ADAMS MAGNETIC	CB4.6/3/3-4S2	BEAD, FERRITE, SMD, 4.6mm
L2 L17	2	MURRATA ELECTRONICS	BLM11B102SPT	FERRITE, CHIP, SMD, EMI FILTER, 1K OHM
C33 C45	2	AMERICAN TECHNICAL CERAMICS	ATC100A101JP150X	CAP ,CHIP , PORCELAIN, 150V, 5%, 100pf
C42 C47	2	A.T.C.	ATC100A102JP150	CAP, CERAMIC CHIP, 50V
C1 C3 C5 C7	15	ATC	ATC100A120CP150	CAP, CERAMIC CHIP, 150V, 12pF
C9-11 C14 C24				
C26 C30 C37				
C40 C53-54				
C52	1	AMERICAN TECHNICAL CERAMICS	ATC100A0r8KP150X	CAPA, CHIP, PORCELAIN, 0.8pf
C31 C46	2	AMERICAN TECHNICAL CERAMICS	ATC100A2R2CW150X	CAP,CHIP , PORCELAIN, 150V, +/-0.25pF, 2.2pF
C41 C51	2	AMERICAN TECHNICAL CERAMICS	ATC100A3R9CW150X	CAP,CHIP , PORCELAIN, 150V, +/-0.25pF, 3.9pF
C6 C8 C29	3	AMERICAN TECHNICAL CERAMICS	ATC100A5R6CP150	CAP, CHIP , PORCELAIN, 150V, 5%, 5.6pf
C32	1	AMERICAN TECHNICAL CERAMICS	ATC100A6R8KP150X	CAPA, CHIP, PORCELAIN, 6.8pf
C27	1	AMERICAN TECHNICAL CERAMICS	ATC100AxxxKP150X	CAPA, CHIP, PORCELAIN, XXpf
C44	1	NEMCO	LSR22/25DK200	CAP, TANTALUM, SM, 22uF, 25V
U5	1	TOSHIBA	S9609A	FET, MICROWAVE POWER, GaAs
U6	1		NE6500278	L/S-BAND MEDIUM POWER GaAs MESFET
C36 C50	2	DIGIKEY	T491D106K025AS	Cap, tantalum,chip,10uF,25 VDC 10%
C43	1	NEMCO	LSR22/25DK200	CAP, TANTALUM, SM, 22uF, 10%, 25V
L1 L4 L10 L14	5	COILCRAFT	1206-471XJBC	INDUCTOR, CHIP CER, 1206, 5%, 470nH
L16				
L7	1	COILCRAFT	0603HS-3N9TKBC	INDUCTOR, CHIP CER, 0603, 10%, 3.9nH
L8	1	COILCRAFT	0603HS-22NTJBC	INDUCTOR, CHIP CER, 0603, 5%, 22nH
L3 L9 L13 L15	4	COILCRAFT	0603HS-39NTJBC	INDUCTOR, CHIP, 0603, 39nH
D1	1	HP	HSMS-2815	Diode, Schottky, Dual Unconnected, SMD
D3-4	2	ARROW	HSMP3814	Diode, PIN
U3	1	HEWLETT PACKARD	MGA-82563	AMP, MMIC, 0.1-6 GHz, 3V, 17dBm, LNA
U7	1	NATIONAL SEMICONDUCTOR	LM258M08A	AMP, DUAL OP, LOW POWER LM258M08A
U2	1	WATKINS JOHNSON	AH-1	AMP, MMIC, HIGH-DYNAMIC RANGE, AH1
U4	1	STANDFORD	SNA-486	AMP, DC-8GHz, GaAs MMIC
VR1	1	DIGI-KEY	3224W-502ECT	POT, TOP ADJUST, SMT, 5K OHM, 3224W
L5	1	TOKO	LL1608-F??K	INDUCTOR, CHIP, MULTILAYER, ??nH
R20 R27-28	3	ROHM	MCR10JW000	Res, chip, 1/10 W, 200 ppm, 5%, 000 ohm
R22-23	2	ROHM	MCR10JW101	Res, chip, 1/10 W, 200 ppm, 5%, 100 ohm
R32-33	2	GARRETT\IEU	MCR10JW5R6	Res, chip, 1/10 W, 200 ppm, 5%, 5.6 ohm
R11	1	GARETT\IEU	MCR18JW000	Res, chip, 1/8 W, 200 ppm, 5%, 0 ohm
R37	1	GARETT\IEU	MCR50JW240	RES. CHIP, 1/2 W, 200 ppm 5%, 24 Ohm
C12 C15 C34	5	JACO	VJ0805A102JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni
C38 C48				bar. 1000 pF
C35 C49	2	JACO	VJ0805A104JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni
				barrier, .1uF
C13 C23	2	GARRETTE	VJ0805A150JXBA	Cap, ceramic chip, 100 V, +/- 5%, NPO,
				Ni barrier, 15pF
C22	1	GARRETTE	VJ0805A220JXBA	Cap, ceramic chip, 100 V, +/- 5%, NPO,
				Ni barrier, 22pF
C2 C4 C16-21	10	JACO	VJ0805Y103KXAM	Cap, ceramic chip, .01uF 50 V, 10%, X7R
C25 C39				
R2	1	GARRETT	RK73H2BT49R9F	Res, chip, 1/8 W, 100 ppm, 1%, 49.9ohm
R8	1	KOA	RK73H2ET3010F	Res, chip, 1/4 W, 100 ppm, 1%, 301 ohm
R12	1	GARRETTE\IEU	RK73H2ET49R9F	Res, chip, 1/4 W, 100 ppm, 1%, 49.9
R31	1	GARRETT\IEU	CR0603-16W-20R0F	Res, Chip, 1/16 W, 100 ppm, 1%, 20.0
			T	ohm
R14 R21 R25	3	GARRETT	RK73H2A1002F	Res, chip, 1/10 W, 200 ppm, 1%, 10K ohm
R5-6	2	GARRETT	RK73H2A1651F	Res, chip, 1/10 W, 200 ppm, 1%, 1.65K
R34	1	GARRETT\IEU	RK73H2A2150F	Res, Chip, 1/10 W, 200 ppm, 1%, 215
R15-16	2	GARRETT	RK73H2A4421F	Res, chip, 1/10 W, 200 ppm, 1%, 4.42K
R13 R19	2	GARRETT	RK73H2A4992F	Res, chip, 1/10 W, 200 ppm, 1%, 49.9K
R7	1	GARRETT	RK73H2A5490F	Res, Chip, 1/10 W, 200 ppm, 1%, 549 ohm

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R4 R10	2	GARRETT	RK73H2A5760F	Res, Chip, 1/10 W, 200 ppm, 1%, 576 ohm
R17-18	2	GARRETT	RK73H2A6812F	Res, chip, 1/10 W, 200 ppm, 1%, 68.1K
R1	1	GARRETT\IEU	RK73H2A10R0F	Res, chip, 1/10 W, 200 ppm, 1%, 10.0
				ohm
R3 R24 R26 R30	4	GARRETT	RK73H2A49R9F	Res, chip, 1/10 W, 200 ppm, 1%, 49.9
R29	1	GARRETT\IEU	RK73H2A????F	Res, Chip, 1/10 W, ??? ppm, 1%, ???
				ohm
R9	1	GARETT\IEU	MCR100J750E	Res, chip, 1 W, 5%, 75 ohm
ISO1	1	CHANNEL MICROWAVE	ELS325	ISOLATOR, 1.90-2.00GHz
		CORPORATION		
U8-9	2	EMC TECHNOLOGY, INC	TVA0500N07W3S	THERMOPAD, 5dB, DC-6GHz, 5N7
Z1-2	2			
RF1-2 X1-8	13			
X10-12				

D L P A **POWER RATING**
REPORT NO. S8310 FCCI ID: LB41900CDMA

Bill Of Materials for 9317c.sch on Tue Jul 28 18:25:12 1998

Reference	Qty	Manufacturer	MFG's P/N	Description
L7	1	PULSE ENGINEERING	PE-53683	INDUCTOR, 9.4uH, HIGH CURRENT
L10 L12	2	MURRATA ELECTRONICS	BLM11B102SPT	FERRITE, CHIP, SMD, EMI FILTER, 1K OHM
C16-17	2	DIGI-KEY	ECE-B1EFS471	CAP, AXIAL LEAD ALUMUNUM, 470uF
U7	1	ANALOG DEVICES	OP-295GS	OP-AMP, RAIL TO RAIL
C29	1	NEMCO	LSR 220/10HM	CAP, TANTALUM, SM, 220uF, 10V
C1-2 C14-15	4	TBD	LSR33/25HK	Cap, Tantalum, Chip, 33uF, 25V, 10%
C5-6 C9 C20	6	NEMCO	LSR22/25DK200	CAP, TANTALUM, SM, 22uF, 10%, 25V
C23 C25				
L2	1	COILCRAFT	1206-471XJBC	INDUCTOR, CHIP CER, 1206, 5%, 470nH
L1 L5	2	COILCRAFT	D03316P-103	IND, PWR, SMT, 10uH, .025DCR, 3.8A ISAT
L11	1	COILTRONICS	CTX20-IP	Inductor, Power Torroid, SMD, 20uH
L14	1	COILCRAFT	DO1608C-104	INDUCTOR, POWER, +/-20%, 100 uH
U8	1	LINEAR TECHNOLOGY	LT1376IS8	REGULATOR, SWITCHING, 1.5A, 500kHz STEP DOWN
U4	1	LINEAR TECH.	LTC1261CS8-4	REGULATOR, VOLTAGE INVERTER, SWITCHED CAPACITOR
U1	1	NATIONAL SEMICONDUCTOR	LM2937ES-10	REGULATOR, LOW DROPOUT, 10V, 500mA
D4	1	TBD	1N914	SWITCHING DIODE HIGH CONDUCTANCE
D1-3	3	DIGIKEY	1N5819MCT-ND	DIODE, SCHOTTKY, SMD, BARRIER RECT.
Q1 Q3	2	DIGI-KEY	FMMT2222A-ND	TRANSISTOR, NPN, SMD
VR1-3	3	HAMILTON	ST63Y-5K-10%	POT., 13 TURN CER, 5K, SMD
J1	1	CONEC	242A12980X	CONN, 9 PIN, 90 DEG ANGLED, FILTERED FEMALE
C26	1	GARRETT	MCH185A332KK	CAP, CERAMIC CHIP, 0603, 50V, 3300pF
F2	1	ANY	R452002	FUSE, SMT, SLO-BLO, 2A
F1	1	LITTLEFUSE	R452 001	FUSE, 1A, SLO-BLO, SMD, R452 SERIES
C24	1	JACO	VJ0805A101JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni bar. 100 Pf
C19 C27-28	5	JACO	VJ0805A103JXBA	Cap, ceramic chip, 100 v, 5%, NPO, Ni barrier, .01uF
C30-31				
C3-4 C7-8	11	JACO	VJ0805A104JXBA	Cap, ceramic chip, 100 v, 5%, NPO, Ni barrier, .1uF
C10-13 C18				
C21-22				
L8 L13	2	COILCRAFT	1008CS-471XKBC	INDUCTOR, CER BASE, 470 nH
R15	1	GARRETT\IEU	RK73H2BT4751F	Res, Chip, 1206, 1/8 W, 100 ppm, 1%, 4.75K
R16	1	GARRETT	RK73H2BT8061F	Res, chip, 1/8 W, 100 ppm, 1%, 8.06K
U2	1	NATIONAL SEMICONDUCTOR	LM2937ES-5.0	REGULATOR, LOW DROPOUT, 5V, 500mA
U6	1	ANALOG DEVICES	TMPOIFS	TEMP-SENSOR, LOW POWER, PROGRAMMABLE
Q2	1		IRFP9140	Xstr, Fet, P-Channel, -21A, TO-247AC
L3-4 L9	3	MURATA	LQG21N2R2K04T1	INDUCTOR, CHIP, FERRITE, 20%, 2.2uH
R9	1	GARRETT	RK73H2A1000F	Res, chip, 1/10 W, 200 ppm, 1%, 100 ohm
R13-14	2	GARRETT	RK73H2A1002F	Res, chip, 1/10 W, 200 ppm, 1%, 10K ohm
R10-12	3	GARRETT	RK73H2A1003F	Res, chip, 1/10 W, 200 ppm, 1%, 100K ohm
R7	1	GARRETT	RK73H2A1652F	Res, chip, 1/10 W, 200 ppm, 1%, 16.5K
R3 R17	2	GARRETT	RK73H2A4751F	Res, chip, 1/10 W, 200 ppm, 1%, 4.75K ohm
R8	1	GARRETT	RK73H2A4992F	Res, chip, 1/10 W, 200 ppm, 1%, 49.9K
R5	1	GARRETT\IEU	RK73H2A5622F	Res, Chip, 1/10 W, 200 ppm, 1%, 56.2K
R4	1	GARRETT\IEU	RK73H2A5902F	Res, chip, 1/10 W, 100 ppm, 1%, 59K
R6	1	GARRETT	RK73H2A9312F	Res, Chip, 1/10 W, 200 ppm, 1%, 93.1K ohm
R1 R18	2	DIGI-KEY	ERJ-1WRQJ1R8	Res, Chip, 1W, 5%, 1.8 Ohm
R2	1	CADDOCK	MP725-.050-1.0%	RES, SMD, PWR FILM, 25W, 1%, 0.05 OHM
T5-9 X1-8	13			

UL PA

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Bill Of Materials for 9384xl.sch on Tue Jul 28 18:26:50 1998

Reference	Qty	Manufacturer	MFG's P/N	Description
L5 L8 L11	3	ADAMS MAGNETIC	CBD4.6/3/3-4S2	BEAD, FERRITE, SMD, 4.6mm
L2 L7 L9	3	MURRATA ELECTRONICS	BLM11B102SPT	FERRITE, CHIP, SMD, EMI FILTER, 1K OHM
D2-3	2	MOTOROLLA	MBRS340T3	Diode, Schottky, SMD, 3A, 40V
C42-43	2	A.T.C.	ATC100A102JP150	CAP, CERAMIC CHIP, 50V
C1 C4-5 C7	14	ATC	ATC100A120CP150	CAP, CERAMIC CHIP, 150V, 12pF
C9-11 C14 C24				
C26-27 C30				
C55-56				
C41	1	AMERICAN TECHNICAL CERAMICS	ATC100A2R2CW150X	CAP,CHIP , PORCELAIN, 150V, +/-0.25pF, 2.2pF
C38	1	AMERICAN TECHNICAL CERAMICS	ATC100A3R9CW150X	CAP,CHIP , PORCELAIN, 150V, +/-0.25pF, 3.9pF
C2 C6 C8	3	AMERICAN TECHNICAL CERAMICS	ATC100A5R6CP150	CAP, CHIP , PORCELAIN, 150V, 5%, 5.6pf
C29	1	NEMCO	LSR22/25DK200	CAP, TANTALUM, SM, 22uF, 10%, 25V
C37	1		TPSE687K020R0150	CAP, TANT CHIP, LOW ESR, SMD , 20V, 68uF, 10%, E-CASE
L1 L10 L14 L16	4	COILCRAFT	1206-471XJBC	INDUCTOR, CHIP CER, 1206, 5%, 470nH
L3-4 L24	3	COILCRAFT	0603HS-33NTJBC	INDUCTOR, CHIP CER, 0603, 5%, 33nH
L6	1	COILCRAFT	DO1608C-104	INDUCTOR, POWER, +/-20%, 100 uH
L12-13 L15	3		DO3340P-223	INDUCTOR, PWR, SMT, SERIESL DO3340, 20%, 22uH
U6	1	LINEAR TECH.	LTC1261CS8-4	REGULATOR, VOLTAGE INVERTER, SWITCHED CAPACITOR
U8	1		LM2675M-ADJ	Reg, simple switch pwr converter high eff. 1A step-dwn, ADJ
D1	1	HP	HSMS-2815	Diode, Schottky, Dual Unconnected, SMD
U4	1	MICROWAVE TECHNOLOGY	MPS-213011-85	AMP, LINEAR, HALF FLANGE, 1.7-2.2GHz
U7	1	NATIONAL SEMICONDUCTOR	LM258M08A	AMP, DUAL OP, LOW POWER LM258M08A
U5	1		NE6501077	AMP, L/S-Band Med Pwr GaAs Mesfet NE6501077
U3 U9	2		SCA-13	Amp,GaAs HBT MMIC, DC-3GHz, SCA-13, SOT-89
U1	1		SCA-17	Amp,GaAs HBT MMIC, DC-3GHz, SCA-17, SOT-89
VR1-2	2	DIGI-KEY	3224W-502ECT	POT, TOP ADJUST, SMT, 5K OHM, 3224W
J1	1	CONEC CORP.	241 A 10010 X	CONN, D-SUB FILTERED 9 PIN STRAIGHT PLUG \ ALT SM
R46	1	ROHM	MCRO3EZPJW1R5	Res, chip, 1/16W, 200ppm, 5%, 1.5, 0603
C40 C49	2		EEV-FC1E470P	CAP, ELEC, 25V, 20%, 8x6.2, Low Impedance, 47uF,smt
C3 C16-21 C25	9	GARRETT	MCH182C103KK	CAP, CERAMIC CHIP, 25V, X7R, 10%, .01uF, 0603
C59				
C22	1	GARRETT/IEU INC.	MCH185A220JK	Cap, Ceramic Chip, 0603, NPO, 50V, 22pF
C13 C23	2	GARRETT	MCH185A150DK	CAP, CERAMIC CHIP, 15pf, 0603
R1 R4-5 R27-28	6	ROHM	MCR10JW000	Res, chip, 1/10 W, 200 ppm, 5%, 000 ohm
R36				
R22	1	ROHM	MCR10JW101	Res, chip, 1/10 W, 200 ppm, 5%, 100 ohm
R32-33	2	GARRETT\IEU	MCR10JW5R6	Res, chip, 1/10 W, 200 ppm, 5%, 5.6 ohm
F1	1	FUSE UNLIMITED	R452 004	FUSE, SMT, SLO-BLO, 4A
R35	1	GARETT/IEU	MCR50JW101E	RES. CHIP, 1/2 W, 200 ppm, 5%, 100 ohm
C34	1	JACO	VJ0805A101JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni bar. 100 Pf
C12 C15 C33	3	JACO	VJ0805A102JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni bar. 1000 pF
C44-45	2	JACO	VJ0805A103JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni barrier, .01uF
C28 C31-32 C47	4	JACO	VJ0805A104JXBA	Cap, ceramic chip, 100 V, 5%, NPO, Ni barrier, .1uF
C58	1	VITRAMON	VJ1812Y224JXCA	CAP, CER CHIP, 1812, 200V, 5%, X7R, 0.22uF
R2	1	GARRETT	RK73H2BT49R9F	Res, chip, 1/8 W, 100 ppm, 1%, 49.9ohm
R12	1	GARRETT\IEU	RK73H2ET49R9F	Res, chip, 1/4 W, 100 ppm, 1%, 49.9
R23	1		MCRO3EZPFX1000	Res, chip, 1/16W, 100ppm, 1%, 100, 0603
R13 R19	2		MCRO3EZPFX4992	Res, chip, 1/16W, 100ppm, 1%, 49.9K, 0603

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R17-18	2	VENKEL CORP	CR0603-16W6812FT	RES, CHIP, 1/16W, 0603, 1%, 68.1K
R45	1	VENKEL CORP	CR0603-16W30R9FT	RES, CHIP, 0603, 1/16W, 200PPM, 1%,
				30.9
R24 R26	2	GARRETT	CR0603-16W-49R9F	Res, chip, 1/16 W, 100 ppm, 1%, 49.9
			T	ohm
R11	1	GARRETT	CR0603-16W-????F	Res, chip, 1/16 W, 100 ppm, 1%,
			T	VALUE=SELECT-IN-TEST
Q1	1		IRFR9024	HEXFET, PWR MOSFET, DPAK
R31	1	GARRETT	RK73H2A1000F	Res, chip, 1/10 W, 200 ppm, 1%, 100 ohm
R10 R40	2	GARRETT	RK73H2A1001F	Res, chip, 1/10 W, 200 ppm, 1%, 1K ohm
R47	1	GARRETT	RK73H2A1002F	Res, chip, 1/10 W, 200 ppm, 1%, 10K ohm
R34	1	GARRETT\IEU	RK73H2A2150F	Res, Chip, 1/10 W, 200 ppm, 1%, 215
R15-16	2	GARRETT	RK73H2A4421F	Res, chip, 1/10 W, 200 ppm, 1%, 4.42K
R30	1	GARRETT	RK73H2A5621F	Res, chip, 1/10 W, 200 ppm, 1%, 5.62K
				ohm
R44	1	GARRETT	RK73H2A6190F	Res, chip, 1/10 W, 200 ppm, 1%, 619 ohm
R3 R8 R39	3	GARRETT	RK73H2A49R9F	Res, chip, 1/10 W, 200 ppm, 1%, 49.9
R6 R29 R38	3	GARRETT\IEU	RK73H2A????F	Res, Chip, 1/10 W, ??? ppm, 1%, ????
				ohm
C35-36 C39 C46	4	KEMET	T491B106K020AS	Cap, tantalum, chip, 10.0uF, 20 VDC 10%
R7 R9	2		ERJ-1WYJ330	Res, chip, 1 W, 200PPM, 5%, 33, 2512
R37	1	DIGI-KEY	ERJ-1WRQJ1R8	Res, Chip, 1W, 5%, 1.8 Ohm
CPLR1	1	Anaren Microwave, INC.	1A1305-30	Coupler, Directional, 30 dB, 1.75-1.98Ghz
FL1	1	TRANS-TECH	TT6P3-????-????	FILTER, BANDPASS, 3 POLE, XXXX MHz.
U2	1	M/A-COM	7N248-S037	ISOLATOR, DROP IN, 1850-1910 MHz
PAD1	1	EMC TECHNOLOGY, INC	TVA0500N07W3S	THERMOPAD, 5dB, DC-6GHz, 5N7
RF1-2 X1-2 X5	5			

2. PRODUCT LABELING (see Appendix J (Exhibit 1))

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The EUT, CDMA Channel Selective Repeater, Models CDR1901 and CDR1912, was initially tested for FCC emission in the following configuration:

See Block Diagram, Appendix K.

3.2 EUT Exercise Software

None

3.3 Special Accessories

None

3.4 Modification

None

3.5 Configuration of Tested System

See Block Diagram, Appendix K.

4. BLOCK DIAGRAM (see Appendix K (Exhibit 4))

5 SIGNATURE PAGE

GENERAL REMARKS:

SUMMARY:

All tests according to United States Standard 47 CFR Parts stated on page 1.

■ - Performed

□ - **Not** Performed

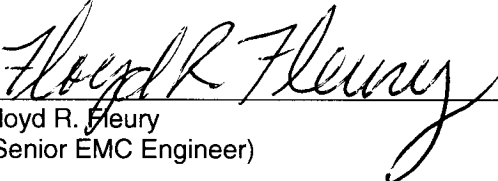
The Equipment Under Test

■ - **Fulfills** the general approval requirements cited on page 1.

□ - **Does not** fulfill the general approval requirements cited on page 1.

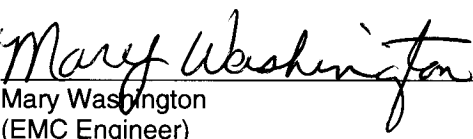
- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:



Floyd R. Fleury
(Senior EMC Engineer)

Responsible Engineer:



Mary Washington
(EMC Engineer)