TELLUS Technology Inc.

40990 Encyclopedia Circle
Fremont, California 94538-2470, USA
Tel: +1 (510) 498 8500
Fax: +1 (510) 498 8540

PRODUCT SPECIFICATION

Name of Product: Tellus CDPD Monarch
Model Number: M130C
Type of Product: CDPD Wireless Modem
Antenna: Fixed Antenna – 0 gain

Communications Interfaces:

Fits PCMCIA Type II and III slots
PCMCIA: NS 16550 emulation
RF Protocol: 19.2 kbps Compliant with CDPD 1.1 Specification
Host Protocol: SLIP or Telnet

Clock Speed and Mixer Frequencies:

1st Clock:	4.9152 MHz
2nd Clock:	4.0 MHz
TCXO:	14.4 MHz
Main LO (Rx and TX):	914-939 MHz
TX VCO:	90 MHz
IF Freq:	45 MHz
2nd Receiver LO:	44.545 MHz

Radio Performance:

Full Duplex

TX frequency:	824-849 MHz
RX frequency:	869-894 MHz
Transmit Power:	600 mW Max
Channel BW:	30 KHz
Maximum channel:	832
Modulation Type:	GMSK
Modulation Index:	BT=0.5
Modulation deviation:	4.8 KHz +/-0.5%

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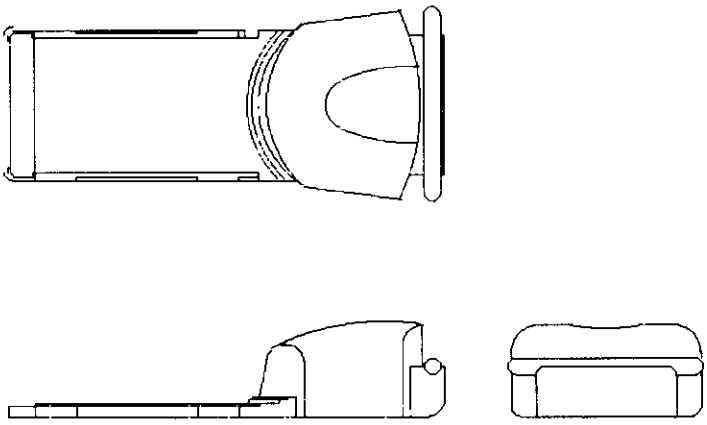

Monarch

8130C Wireless Data Modem

What is CDPD?

CDPD is a Wide Area digital wireless data system, which is currently implemented as an overlay to Advanced Mobile Phone System (AMPS) cellular networks. It is TCP/IP based. This makes it easy to run standard applications over CDPD systems and connect to other commercially available systems, such as the Internet and many corporate LANs

CDPD offers many advantages over cellular circuit-switched data transmission:

Cost-Effectiveness - With most CDPD networks you pay only for the amount of data sent, there are no connection charges or cost for time on the network.

Error-Free Operation - Automatic error checking and correcting during transmission for reliable service. Data packets not received properly are automatically re-sent.

Secure Operation – Air link encryption and key authentication provide secure data communications over the network.

On the road, at the airport, on the golf course, or at the beach, the Monarch wireless PC Card modem keeps you *CONNECTED.*

With a Tellus **Monarch™** wireless data modem, you can always get up-to-the-minute information, from anywhere at anytime. You can send and receive e-mail, check your stock prices, surf the World Wide Web, and even access your corporate network. You'll no longer need to waste time looking for a phone jack, leaving you more time for important things like taking care of business.

Because it's wireless, when attached to your PDA or PC, you can access the information you need from anyplace that you can use a cellular phone. Because it is Cellular Digital Packet Data (CDPD), you get wireless IP networking and can use the same Windows applications that you use today.

The Monarch is the wireless modem of choice for your business, offering

- *Easy installation in an Extended Type II PC Card*
- *Light weight and compact*
- *CDPD, providing the best in cost-effective, error-free, secure wireless data*
- *Battery powered RF option so it won't drain your portable's battery*
- *600mW Transmit power*
- *Connectivity via AT commands and SLIP*
- *TCP, UDP, and ICMP for IP connections*

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RF MICRO·DEVICES

RF2402

UHF QUADRATURE MODULATOR

Typical Applications

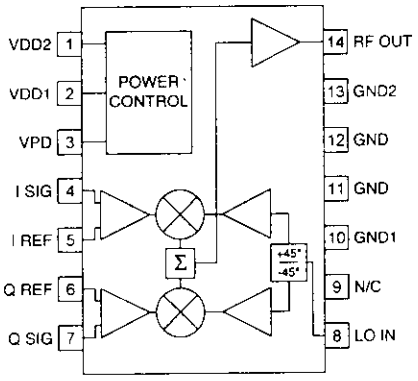
- Digital and Spread Spectrum Systems
- GMSK, QPSK, DQPSK, QAM Modulation
- GSM and D-AMPS Cellular Systems
- AM, SSB, DSB Modulation
- Image-Reject Upconverters

Product Description

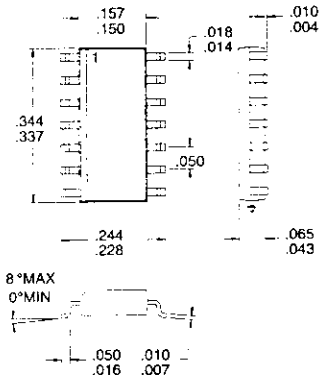
The RF2402 is a monolithic integrated universal modulation system capable of generating modulated AM, PM, or compound carriers in the UHF frequency range. The IC contains all of the required components to implement the modulation function including differential amplifiers for the baseband inputs, a 90° hybrid phase splitter, limiting LO amplifiers, two balanced mixers, a combining amplifier, and an output RF amplifier which will drive a 50Ω load. Component matching, which can only be accomplished with monolithic construction, is used to full advantage to obtain excellent amplitude balance and high phase accuracy. The unit features low power consumption, single power supply operation, and adjustment free operation with no external parts required to operate the part as specified.

Optimum Technology Matching™ Applied

☐ Si BJT ☐ GaAs HBT ☑ GaAs MESFET
☐ Si Bi-CMOS



Functional Block Diagram



Package Style: SOP-14

Features

- Single 3V to 5V Power Supply
- Low Power and Small Size
- CMOS Compatible Power Down Control
- Excellent Amplitude and Phase Balance
- Low Broadband Noise Floor
- 600MHz to 1000MHz Operation

Ordering Information

RF2402	UHF Quadrature Modulator
RF2402 PCBA	Fully Assembled Evaluation Board

RF Micro Devices, Inc.
7625 Thorndike Road
Greensboro, NC 27409, USA
Tel (910) 664 1233
Fax (910) 664 0454
http://www.rfmd.com

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage (V_{DD})	-0.5 to +7.5	V_{DC}
Power Down Voltage	-0.5 to V_{DD}+0.4	V_{DC}
Input LO and RF Levels	+6	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C

Caution! ESD sensitive device.

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Carrier Input					T=25°C, V_{CC}=5V_{DC}, I&Q inputs=2V_{PP}
Frequency Range		600 to 1000		MHz	
Power Level		-3 to +6		dBm	
Input VSWR		1.2:1			With external 50Ω termination.
Input Impedance		200-j200		Ω	At 900MHz, without external 50Ω termination.
Modulation Input					
Frequency Range		DC to 100		MHz	
Reference Voltage (V_{REF})		2.0 to 3.0		V	
Modulation (I&Q)		V_{REF}±2		V	I & Q signals for 0dBm output power.
Maximum Modulation (I&Q)		V_{REF}±2.5		V	In-phase and quadrature signals.
Input Resistance		3000		Ω	
DC Offset		50	150	mV	I_{SIG}-I_{REF} and Q_{SIG}-Q_{REF} for DC balance
Amplitude Error (I/Q)		0.2		dB	
Quadrature Phase Error		±3		°	From 800MHz to 1000MHz.
RF Output					V_{DD}=5V, LO Power=0dBm, LO Freq=900MHz, SSB
Output Power		0		dBm	
Output Impedance		50		Ω	
Output VSWR		1.5:1			
Broadband Noise Floor		-155		dBm/Hz	
Sideband Suppression		25		dB	
Carrier Suppression		40		dB	Modulation DC offset externally adjusted for optimum suppression. Suppression is typically better than 25dB without adjustment.
Power Down					
Turn On/Off Time			<100	ns	
PD Input Resistance		>1		MΩ	
Power Down "ON"		V_{CC}		V	Threshold voltage
Power Down "OFF"		0		V	Threshold voltage
Power Supply					
Voltage		5		V	Specifications
		3 to 5.5		V	Operating Limits
Current		28	39	mA	Operating
		0.5	2	mA	Power Down

Pin	Func
1	VDI
2	VDI
3	PI
4	I SI
5	I RI
6	Q RI
7	Q S
8	LO I
9	PHA

Rev A3 970227