GEMINI^{PD+}
43.2 KBPS MOBILE
## DATA RADIO MODEM

UHF, 800 MHz, 900 MHz

Gemini^{PD+} is a private RF mobile radio modem incorporating an advanced radio design: Dataradio's DSP Parallel Decode modem and a built-in GPS receiver. Gemini^{PD+} uses dual receivers to decode messages in parallel, providing increased sensitivity in multi-path and fading environments. Plus, out-of-band signaling enables Gemini^{PD+} to transmit GPS position reports with no adverse effect on system throughput. Expanded features of the Gemini^{PD+} include a faster CPU as well as more CPU and DSP memory. With speeds up to 43.2 Kbps, the Gemini^{PD+} is the fastest mobile radio modem available on the market today.

FEATURES

- 25 KHz channels 43.2 Kbps, 32 Kbps, 25.6 Kbps, 19.2 Kbps, and 9.6 Kbps

- 12.5 KHz channels 22 Kbps, 16 Kbps, and 9.6 Kbps

- NPSPAC 24 Kbps, 19.2 Kbps, 9.6 Kbps, and 8 Kbps

- 3x faster CPU and 4x more DSP memory for future upgrades

- Supports Smart IP network connections

- Patented Parallel Decode (PD) Technology

- Sophisticated DSP-based Parallel Decode modem design provides added system performance, fewer retries, and more effective throughput

- Three RS-232 data ports with built-in multiplexer.

- Up to 16 internally stored, flash-EEPROM programmable channels

- Automatic channel changing for improved roaming capabilities

- Internal 8-channel parallel GPS receiver (optional)

- Out-of-band signaling enables transmission of GPS reports with no effect on system performance

- One-piece, integrated design

SYSTEM DIAGRAM
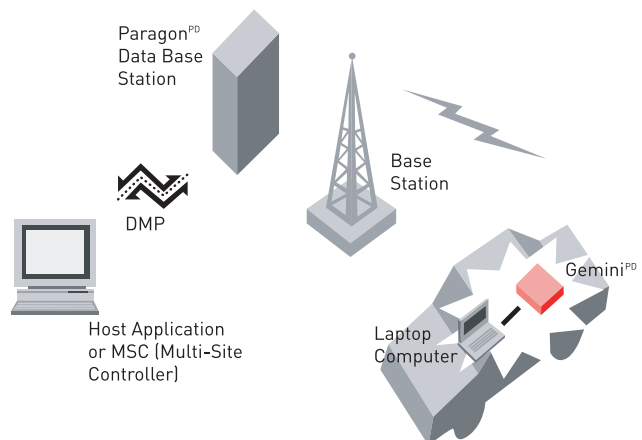
GEMINI^{PD}+ SPECIFICATIONS

GENERAL

Frequency Range	403-460 MHz, 450-512 MHz	RX 851-869, TX 806-824 MHz	RX 935-941, TX 896-902 MHz
Emission Designators	8K60F1D, 15K3F1D, 15K0F1D, 15K6F1D		
Regulatory Compliance	FCC Parts 90 & 90.210 and Industry Canada RSS-119 issue 5		
FCC ID	EOTGPDA	EOTGPDB	EOTGPD9
IC approval	773195525A	773195643A	773-GPD9A
Number of Channels	16 internally stored, flash-EEPROM programmable		
Channel Spacing	12.5, 20 or 25 KHz		12.5 KHz
Modes of Operation	Half Duplex		
Frequency Stability	1.5 ppm		
RF Input/Output Impedance	50 ohms nominal		
Power Supply Voltage	13.6 VDC nominal (negative ground)		
Size	6.0'' W x 2.0'' H x 7.1'' D		
Environmental	Mil-810E shock and vibration		
Operating Temperature Range	-30^{0}C to +60^{0}C		

RECEIVER

Sensitivity	-116 dBm @ 12 dB SINAD with 300 Hz to 3 KHz filtering and 6 dB per octave de-emphasis		
Selectivity	65 dB @ 12.5 KHz, 75 dB @ 25 KHz		
Spurious Response	80 dB		
Intermodulation	75 dB		
Tx-Rx Channel Spacing	any, 5 MHz typical	45 MHz typical	39 MHz typical
FM Hum and Noise	-45dB		

TRANSMITTER

Measurement Method	RSS-119 (IC Approval), EIA (FCC Approval)		
Power Output	10-40 W	10-35 W	10-25 W
Spurious Emissions	80 dB		
Attack Time	<10 ms with less than 1 ms variation		
FM Hum and Noise	-45 dB max (25 KHz)		

MODEM/NETWORK

Forward Error Correction	Reed Solomon or Hypercode			
Soft Sync	Finds sync even through fades			
Accuracy	Undetected error rate nominal 1 x 10^{-9} , failed packets retried			
Addressability	32 bit field			
Privacy	128-bit user settable key			
Rx Sensitivity for 1 % (PER) Packet Error Rate with Parallel Decode, at carrier frequency	UHF (Full Channel)	UHF (Half Channel)	800 MHz (Full Channel)	800 MHz & 900 MHz (NPSPAC Channel)
	-112 dBm @ 19.2 Kbps	-109 dBm @ 16 Kbps	-112 dBm @ 19.2 Kbps	-109 dBm @ 19.2 Kbps
	-110 dBm @ 25.6 Kbps	-112 dBm @ 14.4 Kbps	-109 dBm @ 25.6 Kbps	-112 dBm @ 16 Kbps
	-107 dBm @ 32 Kbps		-107 dBm @ 32 Kbps	
	-106 dBm @ 43.2 Kbps	-110 dBm @ 21.6 Kbps	-106 dBm @ 43.2 Kbps	-110 dBm @ 24 Kbps
Protocol	Dataradio DBA with OOB AVL support			