

Personal Communication Services (PCS) TEST BED Technical Specifications

General Requirement

The PCS Test Bed must provide turnkey GSM compliant cellular services in the European GSM 900/ DCS 1800 and U.S. PCS 1900 commercial mobile communications bands. The Test Bed must include a microcellular switch, base station controller (BSC) and base transceiver station (BTS) in one compact enclosure. The base configuration must provide 8 GSM channels. The modular plug-in chassis design must provide expansion and upgrade capacity for future requirements. Other required design features must include support for high bandwidth Ethernet interfaces, packet based routing of voice or data communications over IP networks, inter-campus to global roaming and browser-based terminals for low-cost operation, administration and maintenance.

Specifications

Configurations:

Number of TRXs	-	Maximum: 2 Internal; 8 Total	Deliverable: 1
Number of BTSs	-	Maximum: 1 Internal; 4 Total	Deliverable: 1
Trunk Ports	-	Capacity: 4 (2 E1/T1 cards)	Deliverable: 4
Traffic Capacity	-	35 Erlangs at 2% GOS (max)	
Busy Hour Calls	-	1000 attempts at 2% GOS (max)	
Connections	-	Up to 100 Simultaneous (full rate, non-blocking)	
Transmission	-	Star and Daisy Chain	

Interfaces:

MSC/BSC	-	GSM Compliant Virtual A Interface	
PSTN	-	ITU PRI ISDN, R2 Capable	
BTS	-	GSM Compliant Abis Interface	
RF	-	GSM Compliant Air Interface; supports Phase 1,2 or 2+ GSM and PCS compliant Mobile Stations	
Transmission	-	Dual Port G.703 compliant E1 75/120 Ohm Dual Port T1.403 compliant T1 100 Ohm	
Ethernet	-	IEEE802.3; 10baseT	Deliverable: 1
Serial	-	DB9 DCE interface	Deliverable: 1

Radio:

GSM RF Interfaces	-	GSM 900, DCS 1800, PCS 1900	
Power Control	-	Static/Dynamic: 12 dB in 2 dB steps	
Rx Sensitivity	-	-106 dBm min for rated Bit Error Rate	
Tx Power Out	-	2,4,8,16 watt option (any 1 of 4)	Deliverable: 1

GSM Vocoding

Integrated TRAU	-	Abis Interface supporting EFR or standard vocoding	
Transcoding Cap	-	Up to 64 traffic channels	

- Electrical
 - Power - 110 volts 50/60 Hz AC (8 Amps max)

- Mechanical
 - Dimensions - 3 cubic feet (max)
 - Weight - 60 lbs (max)

- Environmental
 - Operating - Temperature: -5 to 45 degrees C
Humidity: 10 to 90 degree noncondensing
 - Regulatory - GSM 900 & DCS 1800: CB Report; EN55022,
IEC1000-4; PCS 1900: FCC Part 15 Class A,
NTRL/C; Telecom: E1: 120 ohm CTR 12/13;
75 ohm NTR-4/10/11; IEC 950; Part 6; FCC Part 15
& Part 68 and Industry Canada ICES-003 & CP-03

- Documentation - Installation, Operation and Maintenance Manuals

PERSONAL COMMUNICATION TEST BED ACRONYMS AND ABBREVIATIONS

PCS	Personal Communication Services
GSM	Global System for Mobile Communications
DCS	Digital Cordless System (European 1800 MHz GSM system)
BSC	Base Station Controller
BTS	Base Transceiver Station
IP	Internet Protocol
Browser	e.g. Netscape Navigator, Microsoft Internet Explorer
TRX	Transmit/ Receive (Transceiver) units
T1/E1	Standard telecommunications transmission trunks (1.5/2 Mbps)
Erlangs	Telephone traffic circuit occupancy measurement unit (dimensionless)
GOS	Grade of Service
TRAU	Transcoder Rate Adaptation Unit (vocoder to PCM conversion)
PCM	Pulse Code Modulation
MSC	Mobile Switch Center
PSTN	Public Switched Telephone Network
RF	Radio Frequency
DB9	Multi-pin connector specification
DCE	Data Communication Equipment
DTE	Data Terminal Equipment
ITU	International Telecommunications Union
ISDN	Integrated Services Digital Network
IEEE	Institute of Electrical and Electronics Engineers
10baseT	IEEE802.3(Ethernet Spec) physical connector and transmission line option
Rx	Receiver
Tx	Transmitter
Hz	Hertz (cycles per second)
AC	Alternating Current
Amps	Amperes (unit of current measurement)
Ohm	unit of electrical resistance measurement
lbs	pounds (unit of weight measurement)
C	degrees Centigrade (unit of temperature measurement)
EMC	Electromagnetic Compatibility
FCC	Federal Communications Commission
ICES	Industry Canada Standard
CE	CE marked apparatus conforms to the associated European EMC standards
EN	European Norm (e.g. European EN55022 EMC specification)
EU	European Union
IEC	International Electrotechnical Commission