



Agilent 8960 Series 10

Data Sheet

For the E5515A/B/C/T mainframes
and the E6701B GPRS lab application

Overview of E6701B GPRS lab application functionality

- advanced protocol logging with the GPRS wireless protocol advisor
- mobile-originated and mobile-terminated point-to-point GPRS short message service (SMS)
- cell broadcast GSM SMS
- protocol event trigger outputs
- PBCCH and support for 8-bit or 11-bit PRACH
- IP data connection for data transfer between a device under test and a network
- enhanced control of RLC/MAC, LLC, GMM and SM protocol events
- all features from E1964A GPRS mobile test application such as:
 - multislot configurations for class 10 GPRS mobile devices
 - multislot GPRS RF parametric measurement
 - BLER, ETSI A and ETSI B data connection types

GPRS Wireless Protocol Advisor Monitor - Post Capture [PDP Context and WAP data, traffic Overview]

File Edit View Tools Record Traffic Goto Window Help

Num.	Timestamp	System Time	Protocol	Message	DirMsg
1	05:35:02.000000	53773	NTAL	Random access	
2	05:35:02.041535	53782	GSM L3	Immediate Assignment	
3	05:35:02.253825	53828	RLC/MAC	RlcDat	
4	05:35:02.253825	53828	LLC	UI frame	
5	05:35:02.259440	53829	GMM/SM	ActPDPReq	
6	05:35:02.259440	53829	GMM/SM	ActPDPAcc	
7	05:35:02.259440	53829	LLC	UI frame	
8	05:35:02.267670	53831	RLC/MAC	RlcMacCorw/#OpHeaOct	PacUpAck/
9	05:35:02.272295	53832	RLC/MAC	RlcDat	
10	05:35:02.286130	53835	RLC/MAC	RlcMacCorw/#OpHeaOct	PacDowAss
11	05:35:02.295360	53837	RLC/MAC	RlcDat	
12	05:35:02.313020	53841	RLC/MAC	RlcDat	
13	05:35:02.332280	53845	RLC/MAC	RlcDat	
14	05:35:02.362365	53850	RLC/MAC	RlcMacCorw/#OpHeaOct	PacDowAss

Octet	Decimal	MSB	Bin	LSB	Hex	Description
1	69	0	1000101	01	45	Message 6 at 216 on Link1 [Test Set (Hub to Node)] at Wednesday, June 26, 2002 05:35:02.259440; Size 21 Octets
2	210	1	1010010	10	42	System Time=53829
3	0	0	0000000	00		
4	0	0	0000000	00		
5	4	0	0000100	04		Selector=GMM/SM
6	138	1	0011010	06	8a	Protocol Discriminator=GPRS SM
7	66	0	1000010	02	42	Transaction Identifier sent to the side that originates the TI and TI Value=0
8	11	0	0000101	0b		GPRS Session Management Message Type=Activate PDP Context Accept
9	3	0	0000011	03		LLC SAPI value=SAPI 11
10	35	0	0010001	23		Length=3 octets
		0	1010011	06		Delay class=Delay class 4 (best effort)
		0	1010011	06		Reliability class=Inacknowledged DTN and LLC; Acknowledged RLC; Protected data
11	113	0	1111001	07		Peak throughput=Up to 64000 octets/s
		0	1111001	07		Spare=0(dec)
12	31	0	0001111	0f		Precedence class=High priority
		0	0001111	0f		Spare=0(dec)
13	1	0	0011111	07		Mean throughput=Best effort
		0	0000101	04		Spare half octet=0(dec)
14	43	0	0010101	2b		Packet data protocol address Id=2b(hex)
15	6	0	0000110	06		Length=6 octets
16	1	0	0000101	05		Spare=0(dec)
		0	0000101	05		PDP type organisation=ETF allocated address
17	33	0	0010001	21		PDP type number=IPv4 address
18	156	1	0011100	8c		IPv4 address=156.141.60.245
19	141	1	0001101	8d		

For Help, press F1 Num: 6 of 216 on Link1 6/26/2002 05:35:02.259440 Free Buffers No Connection



GPRS wireless protocol advisor logging software

WPA operating modes: real time or post capture

Traffic overview: single-line display of individual protocol messages in sequential order as received

- **configurable display columns:** message number, message direction, system time, timestamp (based on PC's real-time clock), message name, repeat count and more based on individual field parameters

Decode view: display of detailed message contents

- **display choices:** individual octets of message or line per field of each parameter in the message
- **configurable display columns:** octet number, decimal value, binary value, hexadecimal value, field description (English)

Measurement setup view: graphical block diagram of logging software with indication of which triggers and filters are currently selected

Filters: three types, all individually configurable by the user. Configurations can be saved and recalled for later use.

- **test set filters:** pass filters that limit the amount of information sent over the LAN with choices of MTAL, LAPDm, RLC/MAC, LLC, GMM/SM, SMS, GSML3, SNDCCP, and TCP/IP
- **log filters:** pass filters that limit the amount of information contained in the log. Extremely flexible user configurations based on individual field parameters of all layers. Filters can be combined using AND and OR operations.
- **view filters:** pass filters that limit the amount of information displayed, but do not affect the amount of information actually logged. Extremely flexible user configurations based on individual field parameters of all layers. Filters can be combined using AND and OR operations for each view used.

Triggers: user-configurable conditions that define when to start and stop logging. Triggers can be configured to pre-capture or post-capture a specific number of messages. Configurations can be saved and recalled for later use. Four types of trigger configurations are available:

- **event trigger:** start or stop logging when message dropped, message received or received message overflow event occurs
- **message match trigger:** start or stop logging when received message matches or does not match user-selected message or message parameter(s)
- **time trigger:** start or stop logging on specific timestamp and day based on PC's real-time clock
- **trigger counts:** number of start trigger occurrences before log capture begins

Requirements for optimal performance

- **hardware requirements:** at least a Pentium® III 700 MHz PC with 128 Mbytes of memory, 500 Mbytes of free disk space and a TCP/IP LAN port
- **supported operating systems:** English versions of Windows 98®, Windows NT® 4.0 (with at least service pack four)
- **connection requirements:** 10 Mbit/sec 10 base T Ethernet (RJ-45 connector) using a crossover cable for direct connection to the PC or a standard cable through a switch or hub

IP data connection

- **Transfer of IP data between a device under test and a network with full PDP context activation.**
- **test your device's IP data functionality:** WAP or web browsing, FTP throughput rates with local or remote servers, serial or USB modem functionality, e-mail and data downloads to PC via data port
- **parameter changes during data transfer:** multislot configurations, coding schemes, power levels and channel numbers
- **ping:** test set ping of device under test or other device on a network, network ping of test set or device

SMS

- **GPRS point-to-point SMS:** mobile-originated, mobile-terminated, loopback of mobile-originated message back to the mobile as a new message, choice of two fixed-text messages or user-configurable message
- **GSM cell broadcast SMS:** send up to three messages simultaneously with user-settable channel, message code update number and language, choice of two fixed-text messages or user-configurable message

Upper Layer Protocol Triggers	
Identity Request:	Off
Attach Accept:	Off
Detach Request:	On
Request PDP Ctxt Actvn:	Off
PDP Ctxt Actvn Accept:	Off

Figure 1. Upper layer protocol event trigger outputs are hardware triggers that help you to synchronize protocol events with measurements.

Trigger output functionality

- **frame trigger outputs:** any combination of every frame, every frame except idle frames, every radio block, every BCH multi-frame, every PDTCH multiframe or on a specific frame number (once per hyperframe)
- **protocol event trigger output timing:** protocol events associated with an MS action can provide a trigger when the BS event occurs, when the MS is expected to receive or when the MS is expected to transmit
- **RLC/RR layer protocol event trigger outputs:** any combination of Packet Uplink Assignment, Packet Downlink Assignment, Packet Timeslot Reconfigure, Packet Power Control and Timing Advance and Packet Immediate Assignment messages
- **upper layer protocol event trigger outputs:** any combination of Identity Request, Attach Accept, Detach Request, Request PDP Context Activation and PDP Context Activation Accept messages

RLC/MAC control functionality

- **timing advance control:** user-settable value, continuous communication via PTCCH off or on
- **allocation control:** medium access mode dynamic or fixed, user-settable USF value, user-settable maximum number of octets allocated
- **handover control:** packet timeslot reconfigure off or on, packet power timing advance off or on
- **block poll rate:** user-settable value from one to 32
- **frame start position:** relative, absolute or immediate
- **RLC/MAC header:** off or on in GPRS BCH+PDTCH operating mode

LLC control functionality

- **FCS for BLER:** valid or corrupt
- **payload patterns in ETSI B or for BLER with corrupt FCS:** all zeros, all ones, alternate bits, alternate pairs, alternate quads, PRBS-15, fixed 2B (hex), GMM info for BLER

GMM control functionality

- **attach accept:** user-selectable GMM cause, reject IMSI for non-GPRS services off or on
- **attach reject:** user-selectable GMM cause, reject all attach attempts off or on
- **detach request:** user-selectable GMM cause
- **identity request:** IMSI, IMEI, IMEISV, TMSI

SM control functionality

- **activate PDP context accept:** override requested reliability class off or on with user-selectable value, user-selectable subscribed reliability class, includes acknowledged LLC
- **activate PDP context reject:** user-selectable SM cause

GMM Cause IE
00001011 - PLMN Not Allowed
00001100 - Location Area Not Allowed
00001101 - Roaming Not Allowed In This LA
00010000 - RSC Temporarily Not Reachable
00010001 - Network Failure
00010110 - Congestion
00110000 - Retry Upon Entry Into A New Cell
01011111 - Semantically Incorrect Message

Figure 2. User-selectable GMM cause information elements provide more flexibility when sending specific messages.

GPRS call processing functionality

- **control channels:** BCH on TS0 or BCH on TS0 and PBCH on TS1 on any ARFCN in any band
- **broadcast channel configuration:** FCCH + SCH + BCCH + CCCH + SDCCH / 4 (0-3) + SACCH / C4 (0-3). BCCH SI13 indicates presence of PBCH.
- **packet broadcast channel configuration:** PBCCH + PCCCH + PDTCH + PACCH + PTCCH. PDTCH, PACCH and PTCCH currently unused.
- **BA table:** 16 user-settable neighbor cells
- **cell parameters:** user-settable MCC, MNC (including three-digit for PCS 1900 MHz band), LAC, RAC, NCC, BCC, PBCCH off or on, PBCCH choice of 8-bit or 11-bit PRACH
- **counters:** RACH or PRACH, IP packets and bytes transmitted and received by the DUT
- **error reports:** USF BLER, BLER for all blocks and burst timing error
- **measurement reports:** C value, RX quality, signal variance and interference levels for each time-slot

Technical specifications

Specifications apply to the following hardware and software.

- E5515A mainframes with GPRS upgrade installed (E5515BU 085)
- E5515B mainframes with serial numbers lower than US40300311 or lower than GB40300127 with GPRS upgrade installed (E5515BU 085)
- E5515B mainframes with serial numbers US40300311 and higher or GB40300127 and higher
- E5515C mainframes
- E5515T mainframes with cdma2000 upgrade installed (E5515TU x62)
- E6701B GPRS lab applications with firmware revision B.01

For more information

All technical specifications are included in the E1964A GPRS mobile test application data sheet on the web at:

www.agilent.com/find/8960

Ordering information

For the most up-to-date ordering information, please visit the Agilent site at:

www.agilent.com/find/wirelessprotocol



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