SUNRISE TELECOM®

SunSet® E20c

2M, Data & Signaling Test Set

Data Sheet

SunSet E20c color chassis

The E20c offers exceptional 2M testing features, including full duplex drop and insert testing, international ITU measurements, DTE and DCE datacom emulation, and multiplexer testing. With its full transmission and service test features, the flexible E20c offers an unparalleled set of testing capabilities, as it is designed to test a variety of networks, including Frame Relay, Cellular, Switching, Access, and simple Leased Line Networks. The E20c, in its handheld platform, can troubleshoot and locate almost any problem to optimize your technicians' time and reduce the cost of network downtime with this versatile test set.

KEY FEATURES

- 2 Rx and 2 Tx, Bidirectional Monitor, Dual BERT
- G.821, G.826, M.2100, Alarms, Histograms
- Protocols and Service Test: VF, ISDN, SS7, MFC-R2, GSM/GPRS, V.5x, X.25, and Frame Relay
- New GSM Adaptive Mulit-Rate (AMR)
- Jitter Measurement and Generation

BENEFITS

- High productivity - complete 2M test tools in a single box
- Easy to use with intuitive user interface
- Affordable and versatile

APPLICATIONS

- Both in-service and out-of-service testings on datacom and 2 Mbps networks
- Complete installation and maintenance testing for
  - Cellular networks
  - Access networks
  - Frame relay networks
  - Switching networks
- Design, system integration and equipment verifications

SPECIFICATIONS

Connectors/Ports

2.048 Mbit/s bidirectional E1 interfaces

Line 1 Tx, Line 1 Rx, Line 2 Rx: BNC (f) and 3-pin banana (CF)

Line 2 Tx: BNC (f)

Serial port: 8-DIN, RS-232C (V.24), DTE
USB adapter availabe

Datacom interface: SCSI-36 pin connector with RS232/V.24, V.35, RS449/V.36, X.21/V.11, RS-530, G.703 co-directional terminations

DC input for charging internal battery

Stereo headphones port

Status/Alarm Indicators

Dual-color LED indicators

Test Pattern Generator

Fixed, PRBS, user programmable

Error/Alarm Injection

E1 General

Bit error test rates: 2.048 Mbit/s, N (contiguous) and M (non-contiguous) x 64 kbit/s (N and M = 1 to 31)

Full duplex drop and insert; or encode and decode VF channel

Framing: conforms to ITU-T G.704

Programmable send frame words

V.54 channel loopback: per ITU-T V.54 and TI E1.2/94-003 standards

SPECIFICATIONS

E1 Transmitters

Clock source: Internal, External, Received, Tx offset

E1 Receivers

Frequency: 2.048 Mbit/s ± 6000 bit/s

Impedances: Terminate, Monitor: Line 1 and 2, 75 unbalanced, 120 balanced Bridge

Measurements

Error Report

ITU-T G.821, G.826, M.2100 analysis

Alarm statistics

Frequency, clock slips, wander

Signal level

Print on event at timed interval, at end of test

Programmable measurement

Other Measurements

Pulse mask analysis

Histogram analysis

Propagation delay

View received data

Save test results of measurement runs, error and alarm events

Simultaneously view bidirectional ABCD bits

Jitter generation and measurement

E1 Voice Frequency

Built-in microphone for talk

Monitor speaker or optional headphones

Signal-to-noise ratio measurement

Noise measurements

Tone generation

Level and frequency measurement

Code offset and peak code measurements

Datacom Testing (SS600c)

Interfaces: V.35, V.11/X.21, V.24/RS-232, V.36/RS-449, RS-530, G.703 codirectional

Modes: DTE, DCE Emulation for all interfaces
Bidirectional data in service transmission monitoring (V.35, V.11/X.21, V.24/RS-232, V.36/RS-449)

Bit error injection

Measurements: ITU-T G.821 analysis, error type reports

Block error measurement

Measurement of Data Loss, Data Loss Seconds, Pattern Synchronization Loss, Pattern Synchronization Loss Seconds

Histogram analysis

Propagation delay

Datacom timing analysis

V.110 Testing (SW607)

Conforms to ITU-T V.110

V.110 analysis over E1 line

Bit error rate testing, V.110 FAS error, V.110 Parity Error, V.110 Frame Sync Loss, V.110 Redundant Bit Error Measurements

V.110 framing status monitoring

Bit error and frame error injection

Modes: E1 Single

X.50 64 kbit/s Testing (SW606)

Conforms to ITU-T X.50 Division 2 and 3

Bit error rate testing with ITU-T G.821 analysis

Hitless bidirectional E1 64 kbit/s channel drop/insert to multiport

View and transmit housekeeping bits status S-bit

Bit or frame error injection

Histogram analysis

Modes: Datacom, Muxtest, MUX and E1

C-bit Frame Testing (SW602)

Send and receive C-bits 2 through 15

Bit level decoding

Loopback channel

SWITCHING NETWORK OPTIONS

VF Call Analysis & Emulation (SW601A, SW601E)

Interfaces: Dual E1 Tx and Rx

Modes: Analysis, Emulation

Standards: Conforms to ITU-T Q.422, Q.441, Q.140 series

Programmable ABCD states for IDLE, SEIZE, SEIZE ACK, ANSWER, CLEAR BACK, CLEAR FORWARD, BLOCK ABCD; Default (conforms to Q.422) or 3 user defined setups

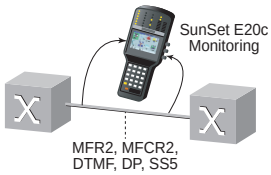
Labelling setup and display of Group I/II Forward, Group A/B Backward digits Q.441 or 3 user defined setups

VF Call Analysis (SW601A)

Bidirectional analysis of MFR1, MFR2/MFR2C, SS5, DTMF, Pulse (DP)

Bidirectional CAS (ABCD signaling) transition analysis

Manual (on selected timeslot) or Auto scan trigger (MFR2/MFR2C, DTMF, & DP only)



08CL-00023A

Automatic trigger: CAS (ABCD selectable), STATE (IDLE, SEIZE, ACKNOWLEDGE, ANSWER, CLEAR FORWARD, CLEAR BACKWARD, BLOCK)

Tracer with timestamp (resolution 1 ms) in relative or absolute values

Digits are recorded and decoded in user-defined labels

MFR2/DTMF digit decode and analysis: Frequency, level, twist, tone period, interdigit period

Pulse (DP) digit analysis: %break, pps, period

Storage of one test record on base unit

Storage of up to 20 test records with user definable labels (requires SA701)

VF Call Emulation (SW601E)

Programmable dial 1 to 15 digits

Dial parameters

Dial tone period, Silent period, Interdigit period, Dial tone level (from -5 to -20 dBm, resolution 1 dB)

Dial pulse %break/period

Receive or call modes

Call setup (receive or call) with on-line call progress status (Tx & Rx) display (ABCD bits, STATE, & Digits) w/time-stamp (resolution 1 ms) in relative or absolute values. Programmable caller ID and category, DTMF dialing

User call emulator

10 sets of stored user signalling emulation setups

Each signalling emulation holds up to 50 total events

Programmable send and receive signalling (CAS), digits (MFR2, DP, DTMF), Wait and Timeout periods

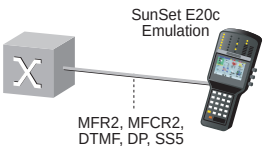
Send period from 0 to 999 ms, Timeout for response from 0 to 999 ms, program up to 20 digits (MFR2, DP, and/or DTMF)

SS5

Conforms to ITU-T Q.140 series

Support 2400 Hz, 2600 Hz, 2400+2600 Hz SS5 line signalling

Control frequencies decode: Socotel-1700 Hz, 1900 Hz, AON-425 Hz, 500 Hz, Echo suppressor/canceller-2100 Hz



08CL-00024A

SS7 Protocol Analysis (SW640)

Supports protocol analysis for SS7 TUP, ISUP, SCCP, SNM, and SNT messages

Supports ITU-T Q.700 series (General, Message Transfer Part, SCCP, TUP, ISUP, TCAP), Chinese (14 & 24 bits), Bellcore TR-NWT-000246, and SSUTR2 standards

Interfaces: Dual E1 Rx 75Ω or 120Ω

Mode: Monitor

OPC and DPC in HEX or decimal format

Capture layer 1 events (alarms)

Capture & store messages for decoding & protocol analysis

Decode layer 2, 3, and 4

Display in HEX or English decode format

Filters: PRE & POST for layer 1, 2, and 3 (DPC, OPC, SI)

SI: SNM, SNT, SCCP, TUP, ISUP

For SNT, SNM: SLS Code, HEAD CODE

For TUP/SSUTR2: CIC, HEAD CODE, Address signal, Address No.

For ISUP: CIC, Message type, Address signal, Address No.

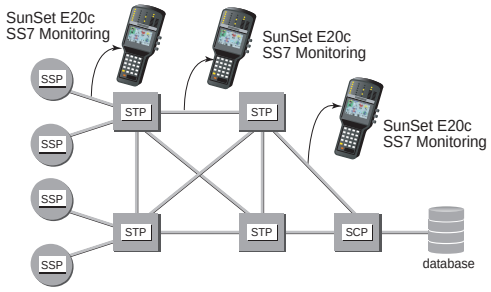
For SCCP: SSN, SLS Code, Message type, Address signal Address number, TCAP OTID, TCAP DTID, INVOKE ID (when applicable based on the SCCP SSN type)

Detailed trace (HEX and/or decoded messages) printing via serial port to printer or to computer

Message storage capacity

Base unit: 90 kbyte, stores approx. 1200 messages

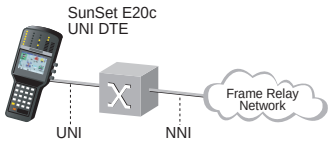
Optional SRAM card: 1 Mbyte card, stores approximately 10 sets of traces of 1200 messages each (requires SA701)



FRAME RELAY NETWORK OPTIONS

Frame Relay Basic (SW603)

Interfaces: E1, V.11/X.21, V.35, V.24/RS-232, V.36/RS-449, G.703 codirectional



LMI Standards: ITU-T Q.933, ANSI T1.617, LMI (DLCI 1023, GOF Vendors), NO LMI

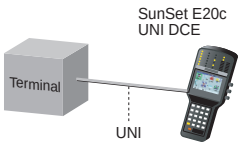
Modes: UNI DTE, UNI DCE

Rates

E1: 2.048 Mbit/s, N (contiguous) and M (noncontiguous) x 64 kbit/s (N & M = 1 to 31)

Datacom: Nx56 kbit/s, Nx64 kbit/s (N = 1 to 32)

G.703 codirectional: N = 1 to 8



LMI Analysis

Settings: T391 Status Inquiry, T392 Status, N391 Full Status Polling, N392 Error Threshold, N393 Monitor Events

Results: Link OK Total, Link Errored Total, Timeout Error, Response Sequence Number, Wrong Message

PVC Status: New, Active, or Inactive DLCI indication (keep the status for up to 60 DLCI)

PING Test

Settings: DLCI Header length (2/3/4 bytes), DLCI Value, Local IP address, Destination IP address, Network Layer Protocol Iden-tifier (NLPID: IP or SNAPIP), Timeout, Number of PINGs

Results: Number of PINGs, Number of PINGs sent, PING status (Received, Unreached, Errored), Round Trip Time (Current, Average, Maximum, Minimum)

InARP support

Conforms to RFC2390 (IETF)

Settings: Mode [Timed (selectable), Manual Request, No InARP], Timeout (selectable)

InARP Statistics: InARP requests sent, InARP response received, InARP response Timeout, InARP requests received, InARP response sent, last IP address assigned

Echo PING: Echo/response to PING request to local IP address

– Results: Total PING request received, IP address of PING requestor, Number of PING requested by IP address time stamped

IP Encapsulation conforms to RFC1490 specification

FOX Test

Settings: DLCI Header length (2/3/4 bytes), DLCI Value, CIR, Frame length (Nx64 bytes N =1 to 64), Forward Explicit Congestion Notification (FECN), Backward Explicit Congestion Notification (BECN), Discard Eligibility (DE)

Results: PVC Status, Current Rate, Errored Frames, RSN Error, SSN Error, Frame Check Sequence (FCS) Error, Count of Frame Received with FECN, with BECN, with DE, Count of transmit frames, Count of received frames

Statistics Analysis

E1 monitoring via dual receiver, datacom monitoring via Y cable adapters [requires SS253Y (V.11/X.21), SS267Y (V.35), SS255 Y (V.36/RS-449), SS254Y (V.24/RS-232)]

Selectable short frame length, long frame length

Frame relay performance: Avg/Max/Min Utilization (%), Avg/Max/Min Throughput (%), Avg/Max/Min Frame/Sec

Frame relay statistics: Avg octet, Total frame, FECN frames, BECN frames, DE frames, Short frames, Long frames, Aborted frame, FCS errors

DLCI analysis: Total active DLCI count, Active DLCI listing (up to 100 DLCI)

DLCI statistics: Avg octet, Total frames, FECN frames, BECN frames, DE frames, Short frames, Long frames, Aborted frames, FCS errors

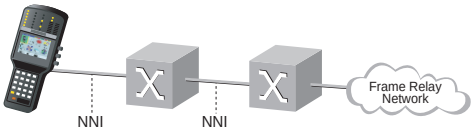
Frame Relay NNI (SW603N)

Requires SW603

Interfaces: E1, V.11/X.21, V.35, V.24/RS-232, V.36/RS-449, G.703 codirectional

LMI Standards: ITU-T Q.933, ANSI T1.617, LMI (DLCI 1023, GOF Vendors), NO LMI

Modes: NNI USER, NNI NETWORK



Rates

E1: 2.048 Mbit/s, N (contiguous) and M (noncontiguous) x 64 kbit/s (N & M = 1 to 31)

Datacom: Nx56 kbit/s, Nx64 kbit/s (N = 1 to 32)

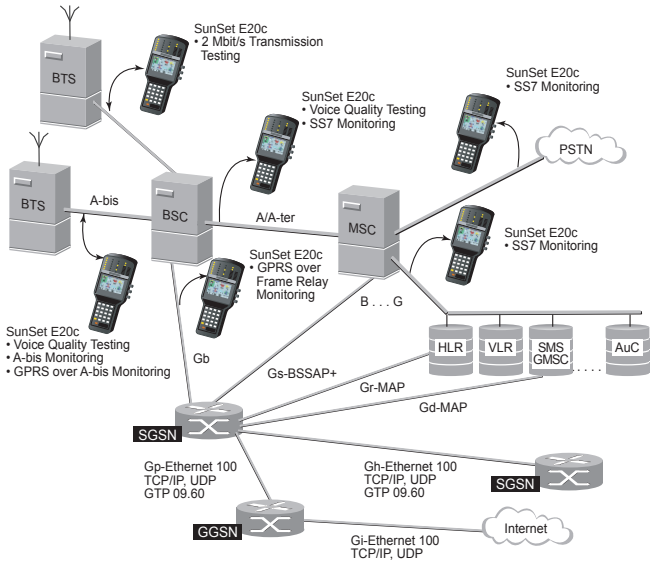
G.703 codirectional: N = 1 to 8

LMI Analysis, PING Test, FOX Test, Statistic Analysis

As described in Frame Relay Basic section

CELLULAR NETWORK OPTIONS

SPECIFICATIONS



GSM Voice & TRAU Access (SW604)

Interfaces: Dual E1 Tx and Rx

Standards: Conforms to ETSI Recommendations for GSM Phase 2+ GSM 08.60

Channels Monitoring

Bidirectional drop/monitor of 8 and 16 kbit/s GSM channels/subchannel

Identify UPLINK and DOWNLINK directions automatically

Automatic frame type detection of any 8 and 16 kbit/s subchannel (SPEECH, DATA, IDLE, O&M, Signalling, Unknown)

Identify 64 kbit/s & 16 kbit/s signalling channel for A-bis

Voice decoded bidirectionally
Support Full Rate, Half Rate, and Enhanced Full Rate (EFR) Encoding

Decoded via built-in speaker or optional headphones (SS149-UPLINK/one ear, DOWNLINK/other ear)

Statistics: PCM Level, control bits decoding, counters for BFI, DTX, and UFE (when applicable)

TRAU Access

Settings: Timeslot (1 to 31), and Subchannel (1 to 4), Type (Speech Full Rate, Speech EFR, Idle speech, Pattern - All 0s, All 1s, 1010, 2^n-1, n = 9, 11, 15), Link direction (UPLINK, DOWNLINK), Idle code, Time alignment

Results: Received control bits (C1 to C21), Elapsed time*, Bit error count and rate*, ES*, SES*, EFS*, UAS, LOSS* (*if test pattern is selected)

GSM AMR Voice Monitoring (SW604-AMR)

GSM Adaptive Multi-Rate option adds support for 4.75, 5.15, 5.90, 6.70, 7.40, 7.95, 10.2 and 12.2 kbit/s modes. Enhances the SW604 GSM Channel Monitorin feature set, which already supports Full Rate (FR), EFR (Enhanced Full Rate), and Half Rate (HR). The AMR optionis based on 3GPP TS 06.90 Adaptive Multi-Ratepeech transcoding (Version 7.2.1).

Features: GSM Channel Monitoring

Standards: According to 3GPP TS 08.60, 08.61, 06.90 standards

Bidirectional drop/monitor of 8 and 16 kbit/s GSM channels/ sub-channel

AMR modes: 4.75, 5.15, 5.90, 6.70, 7.40, 7.95, 10.2 and 12.2 kbit/s

Automatic frame type detection

Identify signaling channel for A-bis, A-ter and A links

Voice decoded bidirectionally

Requires SW604

GSM A-bis Protocol Analysis (SW605)

Interfaces: Dual E1 Rx 75Ω or 120Ω

Standards: Conforms to ETSI Recommendations for GSM Phase 1, 2, and 2+ GSM 04.08, GSM 08.56, and GSM 08.58

Mode: MONITOR

Signalling rate: 64 kbit/s or 16 kbit/s

Supports Layer 2 modulo 8 or modulo 128

Layer 2 SAPI and TEI in HEX or decimal format

Capture and store A-bis messages for decoding and protocol analysis

Capture layer 1 events (alarms), capture and decode layer 2, and 3 protocol messages, display in HEX or English decoded format, with decoding of the Information Elements

Filters: PRE and POST for layer 1, layer 2, layer 3 (Message Discriminator, Message type, Channel number, Timeslot number, IMSI)

- Message discriminator: RLL management, DC management, CC management, TRX management, Reserved

Detailed trace (HEX and/or decoded messages) printing via serial port to printer or to computer

Message storage capacity

Base unit: 90 kbyte, stores approx. 1200 messages

Optional SRAM card: 1 Mbyte card, stores approximately 10 sets of traces of 1200 messages each (requires SA701)

GSM Application Part (MAP-BSSAP) Protocol Analysis (SW644)

Requires SW640 SS7 Analysis - please refer to Switching Network Options Specification Sheet for more details

Supports protocol analysis for GSM Mobile Application Part (MAP), Direct Transfer Application Part (DTAP), and BSSAP for interfaces A to G

Interfaces: Dual E1 Rx 75Ω or 120Ω

Standards: Conforms to ETSI Recommendations for GSM Phase 1, 2, and 2+ GSM 04.08, GSM 04.11, GSM 04.80, GSM 08.06, GSM 08.08, and GSM 09.02

Mode: MONITOR

OPC and DPC in HEX or decimal format

Capture and store messages for decoding and protocol analysis

Capture layer 1 events (alarms), capture and decode layer 2, 3, and 4 protocol messages, display in HEX or English decoded format, with decoding of the layer 4

Filters: PRE and POST for layer 1, layer 2, layer 3 (DPC, OPC, SI, SSN, Address signal, Address number, TCAP OTID, TCAP DTID, INVOKE ID)

- SCCP SSN: MSC, HLR, VLR, EIR, AUC, OMAP, MANAG, BSSAP

Detailed trace (HEX and/or decoded messages) printing via serial port to printer or to computer

Message storage capacity

Base unit: 90 kbyte, stores approx. 1200 messages

Optional SRAM card: 1 Mbyte card, stores approximately 10 sets of traces of 1200 messages each (requires SA701)

GPRS over Gb Analysis (SW629)

Requires SW603 Frame Relay -please refer to Frame Relay Network Options Specification Sheet for more details

Standards: Conforms to ETSI Recommendations for GSM Phase 2+ GSM 08.14 (Frame Relay), GSM 08.16 (Network Service), GSM 08.18 (BSSGP), GSM 04.08 (GMM/SM)

E1 Monitoring via dual receiver, Datacom Monitoring via Y cable adapters [requires SS253Y (V.11/X.21), SS267Y (V.35), SS255Y (V.36/RS-449), SS254Y (V.24/RS-232)]

Frame Relay Statistics

Selectable short frame length, long frame length

Frame Relay performance: Avg/Max/Min Utilization (%), Avg/Max/Min Throughput (%), Avg/Max/Min Frame per Second, Avg Octet, Total Frame, FECN, BECN, DE, Short, Long Frames, Aborted Frame, FCS Errors

DLCI analysis: Total Active DLCI count, Active DLCI listing (up to 100 DLCI)

DLCI Statistics: Avg Octet, Total Frame, FECN, BECN, DE, Short, Long Frames, Aborted Frame, FCS Errors

GPRS Statistics

GPRS Layer Detection PASS/FAIL
Network Service Counter (%) per selected active DLCI
BSSGP Messages Counter (%) per selected active DLCI
GMM/SM Layer Messages Counter (%) per selected DLCI

GPRS over A-bis Analysis for Ericsson BSS (SW621)

Requires SW605 GSM A-bis Protocol Analysis

Standards: Conforms to ETSI Recommendations for GSM Phase 2+ GSM 04.08, GSM 08.56, and GSM 08.58

Supports Ericsson GPRS A-bis Proprietary Extensions

GPRS Channel Monitoring
- Bidirectional monitor of 16 kbit/s GSM channels/subchannels
- Automatic frame type detection of any 16 kbit/s subchannel (Speech, DATA, IDLE SPEECH, O&M, Signalling, PCU)

GPRS Statistics
- GPRS Layer Detection PASS/FAIL
- Packet Channel Management
- GPRS PCU FRAME count

GPRS over A-bis Analysis for Nokia BSS (SW622)

Requires SW605 GSM A-bis Analysis

Standards: Conforms to ETSI Recommendations for GSM Phase 2+ GSM 04.08, GSM 08.56, and GSM 08.58

Supports Nokia GPRS A-bis Proprietary Extensions

GPRS Channel Monitoring
- Bidirectional monitor of 16 kbit/s GSM channels/subchannels
- Automatic frame type detection of any 16 kbit/s subchannel (Speech, DATA, IDLE SPEECH, O&M, Signalling, PCU)

GPRS Statistics

GPRS Layer Detection PASS/FAIL

GPRS Channel Management

GPRS PCU FRAME count

GPRS over A-bis Analysis for Nortel BSS (SW624)

Requires SW605 GSM A-bis Analysis

Standards: Conforms to ETSI Recommendations for GSM Phase 2+ GSM 04.08, GSM 08.56, and GSM 08.58

Supports Nortel GPRS A-bis Proprietary Extensions

GPRS Statistics
- GPRS Layer Detection PASS/FAIL
- GSL Link Management
- GPRS PCU FRAME count

X.25 OPTION

X.25 Link Performance & Statistics

Monitoring I/F
- Single/Dual E1 receivers
- Datacom via Y-cable adapters

X.25 Performance
- Average Utilization
- Maximum Utilization
- Minimum Utilization
- Average Throughput
- Maximum Throughput
- Minimum Throughput
- Average Frame/Second
- Maximum Frame/Second
- Minimum Frame/Second

X.25 Statistics
- Total octets
- Total frames
- Aborted frames
- Short/Long frames
- FCS errors

LCN Analysis

LCN number: 0-4095

Active LCN list: 100 numbers

LCN analysis
- Total active LCN count
- Active LCN listing

LCN statistics
- X.25 bytes
- Total packets
- Packet/second
- Average Utilization
- Average Throughput
- Aborted frames
- Short frames
- FCS errors
- Frame distribution

FOX Test

LCN number: 0-4095

Frame length: 58, 112

Utilization: 0-100%

Pattern: FOX

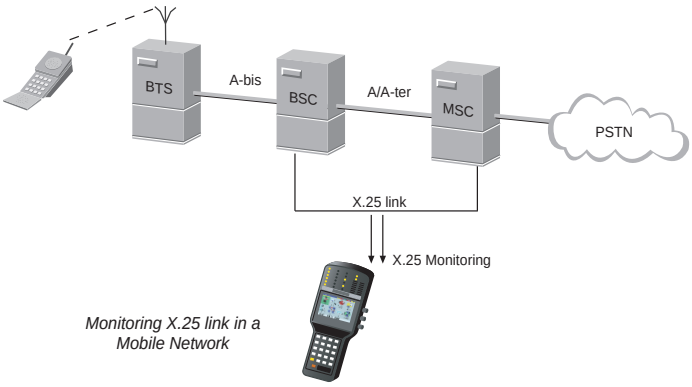
Frame/second: Up to 500

FCS: Auto

Number of frames: 7 digits, Continuous

Duration: Continuous, Time in HHH:MM:SS format

Result: Current kbit/s, FCS Error, Short Frames, Long Frames, Tx Frame, Rx Frame



Monitoring X.25 link in a Mobile Network

General

Interface

E1

X.21/V.11 at 64/128/256 kbit/s*

X.21 bis, RS-232/V.24 at 9.6, 19.2 Async/Synchronous*

V.35*

Rates

E1: 2 Mbit/s, N (contiguous) and M (noncontiguous) x 64 kbit/s

Datacom: Nx56 kbit/s, Nx64 kbit/s

Mode: DTE, MON

Standard: ITU-T X.25

Storage of one test record on base unit

Storage of up to 20 test records with user definable labels (requires SA701)

ACCESS NETWORK OPTIONS

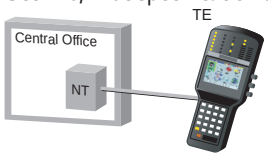
ISDN Primary Rate Testing (SW610)

Interfaces: Dual E1 Tx and Rx

Modes: TE, NT, MONITOR

Layer 1 Testing

Please refer to the SunSet E20/E20c specification sheet for more details.



Terminal Mode

Call Setup

Settings: Caller phone number and sub-address, called phone number and sub-address, layer 2 TEI, signalling timeslot (16 by default), answer mode (automatic or manual), loop or terminate

NT Mode

Call Type: Speech, Data-64, Data-56, Nx64 kbit/s, 3.1 kbit/s Audio, 7 kbit/s (ETSI and AUSSI only)

Perform a BERT test with a data call towards loopback number, in self-call mode (G.821 measurements) or back-to-back mode

DTMF Dialing (SPEECH Call)

Keypad Facilities

Monitor Mode

Automatic Supplementary Services Test

Automatically tests the provisioning of the following supplementary services: CLIP, CLIR, COLP, COLR, CFU CFB, CFNR, S UB, MSN, DDI, CH, UUS, TP, AOC-S, -D, -E, MCID,CUG

Automatic Tele Services Test

Automatically tests the provisioning of the following bearer services, Tele services, and HLC call types: SPEECH, Data-64, Data-56, 3.1 kbit/s Audio, 7 kbit/s, Telephony 3.1 kbit/s, Telephony 64 kbit/s, Fax group 2/3, Fax group 4, MIX Mode, PROC Form, VIDEO TEXT, OSI Mode Local (test toward the local switch) or distant mode (test toward a remote switch)

Sequential Call

Calls each channel one by one with a hold time (1 to 9999 seconds), SPEECH or Data-64, self-call or towards a distant number

Protocol Analysis

Capture and store D-channel messages for decoding and protocol analysis

Capture layer 1 events (alarms), capture and decode layer 2, and 3 protocol messages, display in HEX or English decoded format, with decoding of the Information Elements

Capture and storage in emulation mode or monitoring mode

Filters: PRE (monitor mode only) and POST for layer 1, layer 2 (SAPI and TEI), layer 3 (called number, calling number, call reference, message type)

Detailed trace (HEX and/or decoded messages) printing via serial port to printer or to computer

Message storage capacity

Base unit: 90 kbyte, stores approximately 1200 messages

Optional SRAM card: 1 Mbyte card, stores approxi-mately 10 sets of traces of 1200 messages each (requires SA701)

	ETSI	AUSSI	QSIG	DPNSS	DASS2
Protocol Analysis	✓	✓	✓	✓	✓
Call Emulation	✓	✓		✓	✓
Auto Supplementary Services Test	✓	✓			
Auto Tele Services Test	✓	✓			
Sequential Call	✓	✓		✓	✓

08CL-00027A

V5.x Protocol Analysis (SW630)

Interfaces: Dual E1 Rx 75Ω or 120Ω

Standards

Supports ITU-T/ETSI V5.1, V5.2, and LAPV5

V5.1 conforms to ETSI Recommendations ETS 300 324 and ITU-T Recommendations G.964

V5.2 conforms to ETSI Recommendations ETS 300 347 and ITU-T Recommendations G.965

LAPV5 conforms to ETSI Recommendations ETS 300 125 and ITU-T Q.920, Q.921

Mode: MONITOR

Capture and store messages for decoding and protocol analysis

Capture layer 1 events (alarms), capture and decode layer 2, and 3 protocol messages, display in HEX or English decoded format, with decoding of the Information Elements

Trigger

Layer 1, layer 2, layer 3 and programmable parameters

Filters and Trigger:
PRE filtering for layer 1, layer 2, layer 3 (ISDN, PSTN, Control, BCC, Protect, and Link)

- ISDN: EF Address
- PSTN: Establish, Establish Ack, Signal, Signal Ack, Status, Status Enquiry, Disconnect, Disconnect Complete, Protocol Parameter
- Control: Port Control, Port Control Ack, Common Control, Common Control Ack
- BCC: Allocation, Allocation Comp, Allocation Reject, De-Allocation, De-Allocation Comp, De-Allocation Rej, Audit, Audit Complete, AN Fault, AN Fault Ack, Protocol Error
- Protect: Switch-Over Req, Switch-Over Com, OS-Switch-Over Com, Switch-Over Ack, Switch-Over Reject, Protocol Error, Reset SN Com, Reset SN Ack
- Link: Link Control, Link Control Ack

Detailed trace (HEX and/or decoded messages) printing via serial port to printer or to computer

Message storage capacity

Base unit: 8 kbyte, stores approximately 200 messages

Optional SRAM card: 1 Mbyte card, stores approxi-mately 10 sets of traces of 1200 messages each (requires SA701)

Statistic Analysis (bidirectional)

Layer 2: SABME, UA, DM, RR, REJ, I, and Total frames (count, %)

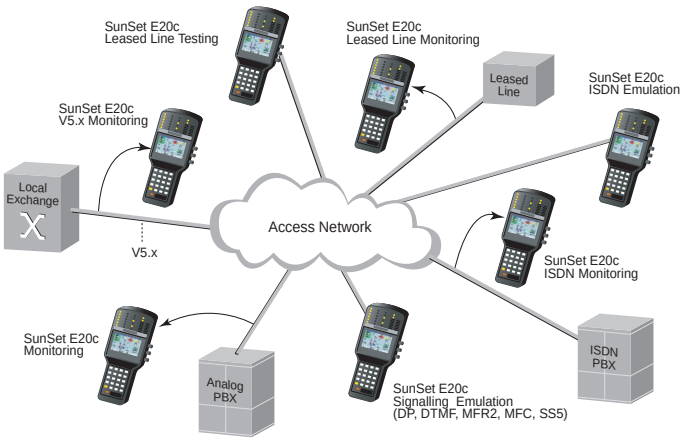
Layer 3: PSTN, BCC, Control, Protect, Link, and Total messages (count, %)

V5.2 3 C Paths Monitoring (SW631)

Requires SW630

Monitor & capture 3 C paths simultaneously (3 timeslots)

All features on SW630 still apply



JITTER OPTIONS

Jitter Measurement (SW691)

Instrument Specs: Per ITU-T O.171 and O.172 (2M payloads)

Measurement Range: Per ITU-T G.823

Wide band Jitter Measurement (with 20 Hz to 100 kHz filter)

High band Jitter Measurement (with 18 kHz to 100 kHz filter)

PASS/FAIL Threshold: Per ITU-T G.823 or User defined

Test Rate: 2.048 Mbit/s

Parameters: Current peak-peak, Maximum peak-peak, RMS, Maximum RMS, Current +peak and -peak, Maximum +peak and -peak, positive and negative phase hits

Units: UI (Unit Interval)

Resolution: 0.01 UIp-p

Accuracy: Per ITU-T O.171 and O.172

Connector: Rx, BNC 75Ω and Banana 120Ω

Test Duration: Timed or Continuous

Storage

Up to 10,000 measurement intervals

1 record on the base unit

10 records with the 2nd memory card

Measurement Interval: 1 second

Jitter Histogram

Jitter Generation (SW692)

Modulation Source Type: Sinusoidal

Jitter Amplitude: Per ITU-T O.171

Jitter Tolerance Measurement

Requires Jitter Generation option

PASS/FAIL Template: Per ITU-T G.823 (from 10 Hz to 100 kHz)

Test Frequencies: Up to 20 points

Technique: Onset of Errors

Storage

1 record on the base unit

10 records with the 2nd memory card

Jitter Transfer Measurement

Require both Jitter Measurement and Jitter Generation options

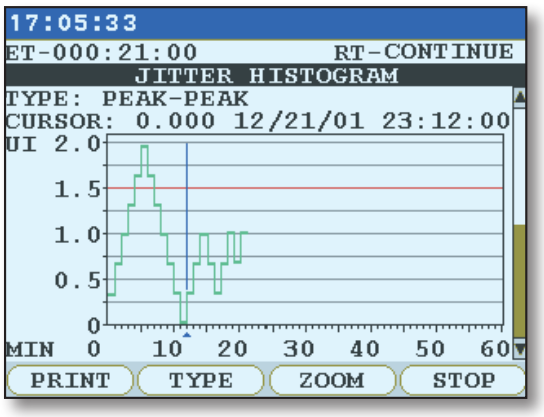
PASS/FAIL Template: Per ITU-T G.735, G.736, and G.737 (from 10 Hz to 100 kHz)

Test Frequencies: Up to 20 points

Storage

1 record on the base unit

10 records with the 2nd memory card



GENERAL

Internal NVRAM data buffer

Internal Battery

Heavy-duty long-lasting keyboard

8 Mbyte field upgradable PCMCIA memory card

2nd memory card slot for future expansion or unit memory storage

AC Adapter/battery charger

Languages: English, French, Italian, Spanish

Stores up to 10 user configurations (profiles) with alphanumeric labels

Windows Remote Control and Remote Storage

TL1 Command Support

Printer/communication port

Operating temperature: 0˚C to 50˚C

Storage temperature: -20˚C to 70˚C

Humidity: 5% to 90% noncondensing

Size: 10.5 cm x 6.5 cm x 27 cm (approx)

Weight: 1.3 kg (approx)

ORDERING INFORMATION

Test Set

SSE20C . . . . . SSE20c Color Screen
Configured with 2 Rx and 2 Tx 2.048 Mbps ports with BNC (f) and 3-pin banana (CF) connectors. CE compliant

Hardware Options

SS600C . . . . . SSE20C Datacom Software/Hardware
Includes software for datacom testing (SW600DC) and datacom cable (SS308). Requires additional adapters or adapters packages from Datacom Adapters section. For E20C color units only.

Software Options

SW600TL1 . . . . . TL1 Remote Control

SW600WIN-C. . . Windows Remote Control
Includes SS115D (DB9 to DIN8), SS122B (Null Modem), and SA910-M which includes SA910-CD.

SW601A . . . . . VF Call Analysis

SW601E . . . . . VF Call Emulation

SW602 . . . . . C-bit Analysis

SW603 . . . . . Frame Relay
Includes manual SS266-1

SW603N . . . . . Frame Relay NNI
Requires SW603

SW604 . . . . . GSM Voice and TRAU Access
Includes manual SS266-2

SW604-AMR . . . GSM AMR Voice Monitoring

SW605 . . . . . GSM Abis Protocol Analysis
Includes manual SS266-2

SW606 . . . . . X.50 Analysis
Includes manual SS266-6

SW607 . . . . . V.110 Analysis
Includes manual SS266-7

SW608 . . . . . X.25 Analysis
Includes 1 Mb SRAM Memory Card SA701

SW610 . . . . . ISDN Monitoring and Call Emulation
Required for ISDN Protocols when ordering SW611-SW615. Includes manual SS266-3

SW611 . . . . . ETSI (EuroISDN) Protocol
Requires SW610

SW612 . . . . . Aussi Protocol
Requires SW610

SW613 . . . . . QSIG Protocol Monitor Only
Requires SW610

SW614 . . . . . DPNSS Protocol
Requires SW610

SW615 . . . . . DASS2 Protocol
Requires SW610

SW621 . . . . . GPRS Abis Analysis-Ericsson BSS
Requires SW605 GSM Abis option

SW622 . . . . . GPRS Abis Analysis - Nokia BSS
Requires SW605 GSM Abis option

SW624 . . . . . GPRS A-bis Analysis – Nortel BSS
Requires SW605 GSM Abis option

SW629 . . . . . GPRS Gb Analysis
Requires SW603 Frame Relay option

SW630 . . . . . V5.x Monitoring
Includes manual SS266-5

SW631 . . . . . 3-timeslot V5.2 Monitoring
SW630 required

SW640 . . . . . SS7 Analysis (MTP, SCCP, TCAP)
Required for SS7 Analysis when ordering SW641-SW646 Includes manual SS266-4

SW641 . . . . . TUP Analysis ITU Standard
Requires SW640

SW642 . . . . . ISUP Analysis ITU Standard
Requires SW640

SW644 . . . . . Mobile Application Part BSSAP (DTAP+MAP)
Requires SW640

SW645 . . . . . ISUP Analysis Chinese Standard
Requires SW640

SW647 . . . . . ISUP Analysis ANSI Standard
Requires SW640

SW648 . . . . . SSUTR2 Protocol
Requires SW640

SW691 . . . . . Jitter Measurement

SW692 . . . . . Jitter Generation

SA701 . . . . . 1MB SRAM Card. Memory Card with battery back up to increase the storage capacity of the test set

SS600DCC. . . . . Datacom Adapters Package
Includes DTE and DCE datacom adapters

SS600DCY . . . . . Datacom Y-Adapters Monitor Package
Includes DTE, DCE and Y (monitor) datacom adapters

Note: Software card may be upgraded to include additional options at any time.

PHOENIX DATACOM
NETWORK PERFORMANCE AND SECURITY

supplied and supported in the UK by Phoenix Datacom
tel: 01296 397711 - info@phoenixdatacom.com - www.phoenixdatacom.com