ShibaSoku®

PHS35L

COMMUNICATION INSTRUMENTS

PHS HANDY ANALYZER

General

The PHS35L handy analyzer is a handy type air sequence monitor designed to make real time monitoring of communication between CS and PS in compliance with PHS system standards (2nd generation wireless communication). This unit allows to take communication status and control data between CS and PS regarding service area survey. Sequential measurement analysis and diagnosis through monitoring descending /ascending control slot and communication slot in communication carriers make simply available such as RF level measurement, error rate measurement, control slot with CS-ID analysis, link protocol with seamless handover by large LCD screen on this unit. In combined use with PC, this unit enables to upgrade its processing for display/analysis/translate in protocol and CS time difference.

Features

- Compact, light-weight design enables to suit the field measurement even employing large scale LCD.
- Capable of long-hour operation by Ni-MH cell.
- USB port in PC I/F makes high performance on the PC.
- Cell station measurement
  - SCAN (Non-designate cell station measurement)
  - LCCH (Designate cell station measurement)
  - INTERVAL (Non-designate cell station time difference measurement)
  - WAVE (Burst waveform monitor)
- Spectrum measurement
  - RES MON (Designate cell station resource monitor)
- Link measurement
  - PROTOCOL (Link protocol monitor)
  - TCH ERR (Communication channel error measurement)
  - LCC+SCH (super framed and link monitor)

Specifications

- Electrical characteristics
- Reception frequency range
  1893.65 to 1919.45 MHz
- Reception frequency setting
  Carrier number 251 to 255, 1 to 82
- Reference frequency accuracy
  $\pm 3 \times 10^{-6}$
- Wireless access system
  TDMA-TDD
- Modulation system $\pi/4$ sift QPSK
- Signal transmission rate
  384 kbps
- Signal level measurement range and accuracy
  Attenuator OFF 10 to 45 dBμV (EMF), $\pm$3 dBμV
  Attenuator ON 35 to 70 dBμV (EMF), $\pm$3 dBμV
- Selectivity on adjacent channel
  $\geq$50 dBμV
- Reception signal input system
  Antenna input (Antenna gain 2.0 dBi)
  Connector input (Connector type; SMA-R)
- Detection outputs
  Signal level 0.7 Vp-p $\pm$0.1 Vp-p (Input level of 50 dBμV with attenuator OFF)
  Output impedance
  1 kΩ
- Physical slot for control
  Measurement channel
  BCCH (A), BCCH (B), PCH, SCCH as used in descending.
  SCCH as used in ascending.
  Data display format
  HEX display
- Physical slot for communications
  Measurement channel
  Synchronous burst as used in descending/ascending, FACCH, SACCH

Handover tracing FACCH/SACCH analyzed
TCH switching type, recall-type handover trace
Frame error measurements
Displays number of errors for every 240 slots.
Display unique word errors and CRC errors.

・Time difference measurement
Measurement resolution
0.42 μs
Measurement accuracy
±1.0 μs

・CS-ID input method
CS-ID copy from non-designate cell station measurement or key input

・PS-ID input method
Auto input or key input

●Cell station measurement

・Non-designate cell station measurement
Carrier number setting
251 to 255, 1 to 82
Carrier sensitive level setting
10 to 80 dBμV
Measurement time setting
0 to 90 sec
Measurement method
Sequential repeated measurement setting

・Designate cell station measurement
Carrier number setting
251 to 255, 1 to 82
Carrier sensitivity level setting
10 to 80 dBμV
Measurement method
Sequential repeated (real-time) or 1 super frame received.
CS-ID designate system
CS-ID copy from non-designate cell station measurement or key input.

●Spectrum measurement

・Measurement channel range
All channels (251 to 255, 1 to 82)

・Measurement slot All slots

・Measurement method
Sequential

・Measurement levels
Attenuator OFF 10 to 45 dBμV (EMF)
Attenuator ON 35 to 70 dBμV (EMF)

・Displays
Control carrier Time constant attenuation
Call carrier Updated every 3 sec

●Link measurement

・Protocol measurement
Display details PS-ID, reception level, octet information elements, protocol identification, message category, information element identification

・TCH ERR measurement
Display details Ascending/descending call channel signal level, unique word error, CRC error. Displayed each in 1.2 sec intervals (240 slots)

●Serial data input/output (For connecting to the external PC)
USB interface (series B connector)
RS232C interface

●Displays STN LCD
Dot configurations
320 (H) x 240 (V)
Dot size 0.27 (H) x 0.27 (V) mm

●External file memory
Compact flash memory

●Number of storable data parameter
Approx. 1,000 data (Depend on file size)

●Measurement conditions storage memory
Approx. 96 parameters

●Measurement conditions storage time
Approx. 3 years (Back-up by lithium primary battery)

●Calendar display Y/M/D; H/M/S

●Power supply Dedicated battery or dedicated AC adapter

●Power saving management
Automatic power off system when no key operation occurs dulling 10/20/30 min. (Selectable)

●Battery management
Enforced power off system with warning display in case battery charge near end then voltage fall down.

●Battery voltage display
Remaining battery power displayed on graph, warning flashes when battery charge nears end and recharge warning LED (red) illuminates.

●Battery continuous operation time
Standby (power on)
Approx. 10 hours (Depend on charge conditions)
Measurement (sequential)
Approx. 8 hours (Depend on charge conditions)

●Dedicated battery
Battery type Ni-MH secondary battery (7.2 V, 3.5 Ah)
Number of recharges
More than 500 times (Depend on the used conditions)

●Dedicated battery charger
Used for charging dedicated battery.
Usable as AC adapter.
Input power AC 90 to 240V
Output power charging
DC 9 V, 1000 mA
Output power operation
DC 9 V, 500 mA
Charge time Approx. 5 hours (Depend on the battery discharge level)

Specifications

●General specifications

Operating temperature range	0℃ to 40℃ (10℃ to 40℃ for charger)
Relative humidity	≤90% RH (non-dewing)
Power consumption	
During standby (power on)	Approx. 350 mA
During measurement (sequential)	Approx. 420 mA (average)
Dimensions	215 (W) x 140 (H) x 50 (D) mm (without antenna extended)
Weight	Approx. 1 kg (including battery)
Accessories	Dedicated battery (Ni-MH) Dedicated battery charger (usable as AC adapter) Shoulder belt Hand strap User's manual Analysis software application (Including software for capturing file in the unit) RS-232C serial connection cable

●Options Compact flash memory card

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