SIGNALING TESTER
MD1620C
PHS 1.9 GHz

CE **GPIB**

6

The MD1620C has all the functions needed for operation tests and function tests of CS/PS for PHSs. The MD1620C has an air-interface according to RCR STD-28 and can be used as a PS/CS simulator. Control sequences, such as standby, registration, origination, termination, CH handover, disconnection-by-CS and disconnection-by-PS can be tested.

The MD1620C is the most suitable tester for connection tests at the last stage of production lines of PS/CS and for function tests at development stage. With the MS8604A Digital Mobile Radio Transmitter Tester and the MG3670B/3671A/3660A Digital Modulation Signal Generator, measuring systems for PHS systems can be easily constructed.

Features
- The MD1620C has a built-in CODEC and communication tests between the simulator and a CS/PS are possible using a hand-set supplied as a standard accessary.
- Parameters and optional sequences for tests can be freely defined.
- Also, layer-3 sequences can be freely defined and layer 3 semi-normal sequence tests are possible.
- Defined sequences and parameters can be stored on a 3.5-inch floppy disk.
- Easy-to-use operation system by windows and menu selection method

Measurement example
- **Sequence test starts at a stroke of a key**

By pressing Start key on the front panel, screen changes to the sequence monitor screen, and then sequence test starts. Execution conditions and test results of the sequence test are shown with the flowchart. Test sequence under execution is indicated with a cursor in a reverse display mode, shown as follows, and the cursor moves to next test sequence as the sequence test proceeds.

Sequence test results are indicated with a mark "●" or "X". For example, when the registration sequence is performed correctly, the mark "●" is displayed on its left side and the mark "X" is displayed when an error is detected. When the sequence test ends and each sequence is displayed with the mark "●", an operator can find at sight that a DUT is OK.
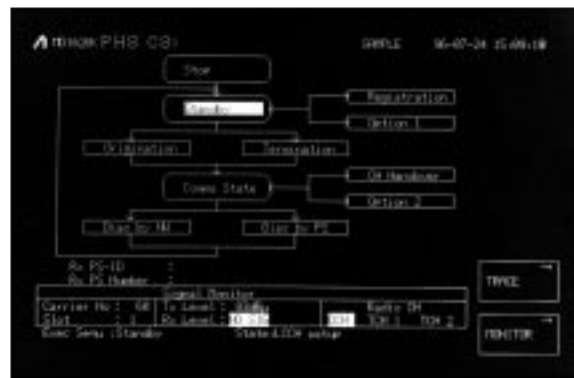
Sequence monitor screen (CS simulation mode)

- **Real-time display of slot error rates and a receiving level, etc.**

The MD1620C displays slot error rates and a receiving level (the transmission level from a PS) in real time and by turning a rotary knob on the front panel, a transmission level can be continuously varied.

Execution condition monitor screen (CS simulation mode)

● **Control signals of up-link and down-link can be displayed by using a trace function provided as an option.**

By using the trace function, up-link and down-link control signals sent or received by PS or CS during a sequence test are stored in built-in memories and are displayed after the sequence test ends. Max. 100 steps back from the test end are displayed in layer 2 and layer 3 levels and with elapsed time in 10 ms steps. This function allows engineers to find out the cause (s) when errors occurred during the sequence test and is indispensable to software debug and tests.

Trace screen (CS simulation mode)

● **Can freely set parameters of the control/communication CH**

When being used as a CS simulator, a control CH and broad casting information that the MD1620C sends can be set at the control CH setting screen and communications CH can be set at the communication CH screen. Handover test during communications can be performed by alternatively changing a communication CH 1 and a communication CH 2.

Control CH setting screen (CS simulation mode)

Communication CH setting screen (CS simulation mode)

● **Can be freely defined layer 3 sequences**

Basic test sequences, such as registration, origination, termination, handover, disconnection-by-CS and disconnection-by-PS are stored on a 3.5-inch floppy disk supplied as a standard accessary. In addition, sequences according to user's applications can be defined by modifying the basic test sequences or adding messages to the sequence, and parameters in messages can be set freely.

And by defining arbitrary sequences in Option 01 and Option 02, sequence tests for supplement service and semi-normal sequence can be done.

**Sequence setting screen
(CS simulation mode: origination sequence)**

● **Parameters and sequences defined can be stored on a 3.5-inch floppy disk.**

Parameters and test sequences defined can be stored as a file on a floppy disk and up to 100 files can be stored. Trace data gotten by using the trace function can be also stored on a floppy disk.

File management screen

Specifications

Tx	Frequency range	1895.15 to 1917.95 MHz
	Frequency setting interval	300 kHz steps
	Number of carriers	2 carriers
	Transmission level range	13 to 83 dBµV[*1] per carrier
	Transmission level accuracy	±2 dB (24 to 83 dBµV) at 25° ±5°C
Rx	Frequency range	1895.15 to 1917.95 MHz
	Frequency setting interval	300 kHz steps
	Number of carriers	1 carrier
	Receiving level range	77 to 149 dBµV[*1]
	Receiving error rate	BER $\leq$1 x 10^{-8} at 77 dBµV
Reference oscillator	Frequency range	10 MHz
	Stability	Aging rate: 2 x 10^{-8}/day, 2 x 10^{-7} year Temperature characteristics: ±5 x 10^{-8} (referred at 25°C)
	External reference input signal	10 MHz, TTL level
	External control	GPIB: SH1, SR1, DC1, C0, AH1, RL1, DT0, T5, PP0, L4 RS-232C bit rate: 600, 1200, 2400, 4800 bps
	Floppy	3.5-inch floppy disk, MS-DOS[*2] format 2DD format: 720 KB (when formatted) 2HD format: 1.2 MB (when formatted)
	Power	85 to 132/170 to 250 Vac, 47.5 to 63 Hz, $\leq$230 VA
	Dimensions and mass	426 (W) x 221.5 (H) x 451 (D) mm, $\leq$20 kg
	EMC[*3]	EN55011: 1991, Group 1, Class A EN50082-1: 1992
	Safety	EN61010-1: 1993 (Installation Category II, Pollution Degree II)

[*1]: 0 dB µV = –113 dBm
[*2]: MS-DOS is a registered trademark of Microsoft Corporation.
[*3]: Electromagnetic compatibility

Ordering information

Please specify model/order number, name and quantity when ordering.

Model/Order No.	Name	
MD1620C	**Main frame** Signaling Tester	
	Standard accessories	
J0576B	Coaxial cord, N-P • 5D-2W • N-P, 1 m:	2 pcs
F0012	Fuse, 3.15A:	2 pcs
J0017F	Power cord, 2.5 m:	1 pc
Z0252A	System disk (3.5-inch):	1 pc
Z0252B	System disk for back-up (3.5-inch):	1 pc
Z0252C	Disk for calibration (3.5-inch):	1 pc
G0057	Hand-set	1 pc
W0778AE	MD1620C operation manual:	1 copy
MD1620C-13	**Option** Trace function	
CU111A3N-C	**Optional accessories** Circulator (1895 to 1918 MHz, TDK product)	
J0657	Adaptor (N-P • SMA-J)	
J0658	Adaptor, SMA-P • SMA-J (L-type)	
J0007	GPIB cable, 1 m	
J0008	GPIB cable, 2 m	
J0324	RS-232C cable, 3 m	
B0329D	Cover	
B0331D	Front handle (2 pcs/set)	
B0332	Joint plate (4 pcs/set)	
B0333D	Rack mount kit	
B0334D	Hard carrying case (with covers and casters)	

Notes:
- The MD1620C is developed according to RCR STD-28. However, test sequences for Appendix 1 (authentication) and Appendix 2 (subscriber data write-in) are not provided.
- When connecting the MD1620C to a PS or a CS with a cable or antennas, a circulator optionally provided is necessary.
- Optional trace function stored on a system disk can be used only with the MD1620C having the same serial number as the number indicated on the system disk.

6