Discover What's Possible™ Anritsu

PRODUCT INTRODUCTION

MX368141A

HSDPA IQproducer

ANRITSU CORPORATION

MG3681A Digital Modulation Signal Generator

MX368141A HSDPA IQproducer Product Introduction

Anritsu Corporation
Measurement Business Center Wireless Measurement Div.
Ver 1.00

Outline

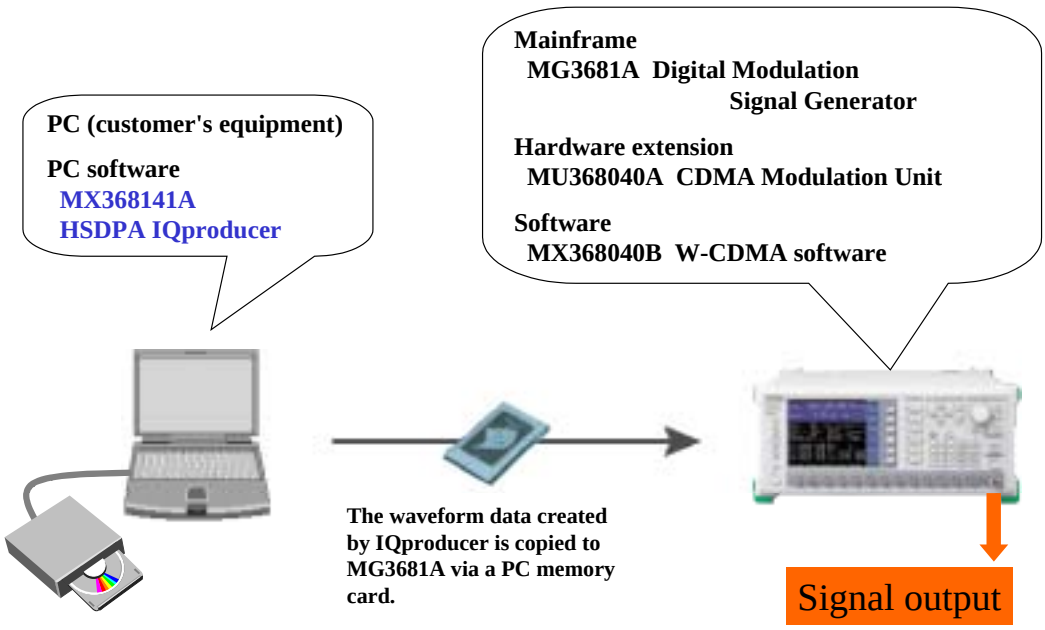
MX368141A HSDPA IQproducer (hereinafter called IQproducer) is the PC software that enables to change parameters and generate waveform data of HSDPA channels in Uplink and Downlink conforming to 3GPP Release5.

When the waveform data created by IQproducer is loaded into MG3681A Digital Modulation Signal Generator (hereinafter called MG3681A) , it can output HSDPA modulated signals of various modulation parameters. In this case, the MG3681A must install MU368040A CDMA Modulation Unit and MX368041A or MX368041B W-CDMA Software (hereinafter called MX368041A or MX368041B).

The parameter of a setting file for HSDPA waveform data can be converted into the waveform data for MG3681A by editing it with a text editor, etc. In addition, the following parameter sheets are attached as default files. Users can generate their desired waveform data by freely changing parameters based on these parameter sheets.

* <3GPP TS25.101 A.7.1 Fixed Reference Channel(FRC)>
  H-Set1(QPSK), H-Set1(16QAM), H-Set2(QPSK), H-Set2(16QAM),
  H-Set3(QPSK), H-Set3(16QAM), H-Set4(QPSK), H-Set5(QPSK)

Equipment composition

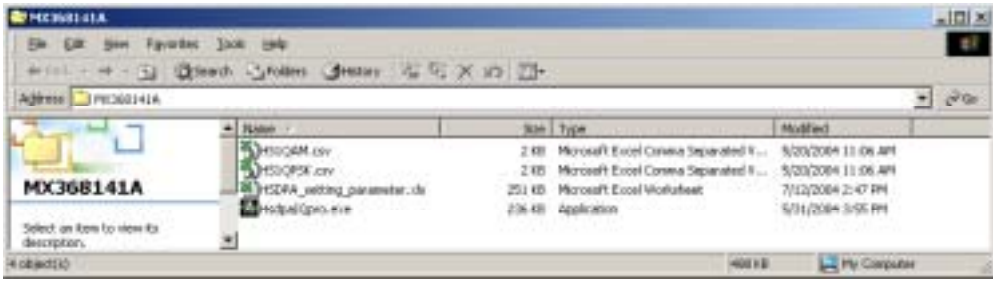


IQproducer PC Operating environment

OS	Windows 2000/XP
CPU	Pentium 300MHz or faster
Memory size	>= 128MB
HDD	Occupation <= 200MB
Display	800 x 600 pixels or more
Peripheral equipment	-Readable on CD-R -Data can be saved in Compact-Flash. (PC card adapter is required for downloading to MG3681A)

Waveform creation procedure 1-1

The following files are included in MX368141A HSDPA IQproducer.



Waveform creation procedure 1-2

HSDPA IQpro.exe :IQproducer startup file

HS1QAM.csv, HS1QPSK.csv : setting file
Reference setting files of csv format are attached.
Files are edited with Text Editor or Excel.

HSDPA_setting_parameter.xls : reference parameter sheets
The following parameter sheets are saved for reference.
H-Set1 (QPSK), H-Set1 (16QAM),
H-Set2 (QPSK), H-Set2 (16QAM),
H-Set3 (QPSK), H-Set3 (16QAM),
H-Set4 (QPSK),
H-Set5 (QPSK),
Uplink [HS-DPCCH]
Can be used as setting files by saving them in csv format.

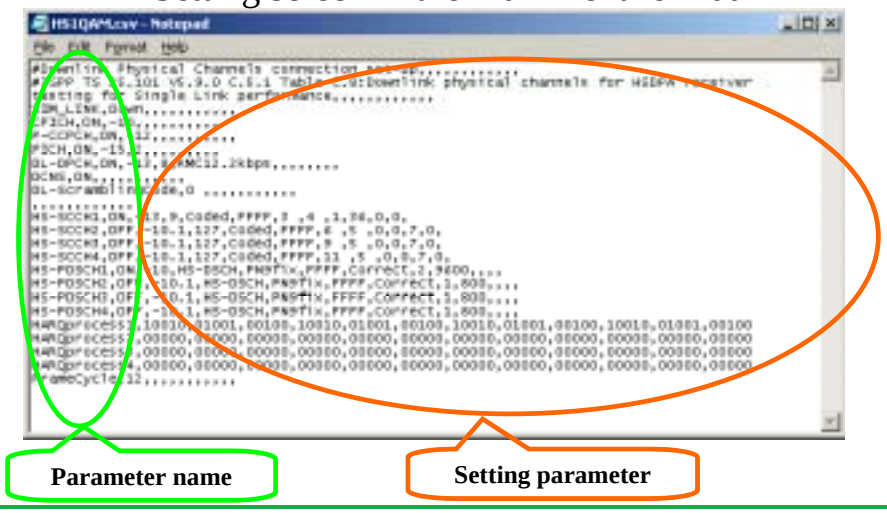
Attached setting files(csv,xls) help beginners to use the software easily.

Waveform creation procedure 2-1

Parameter setup of a setting file:

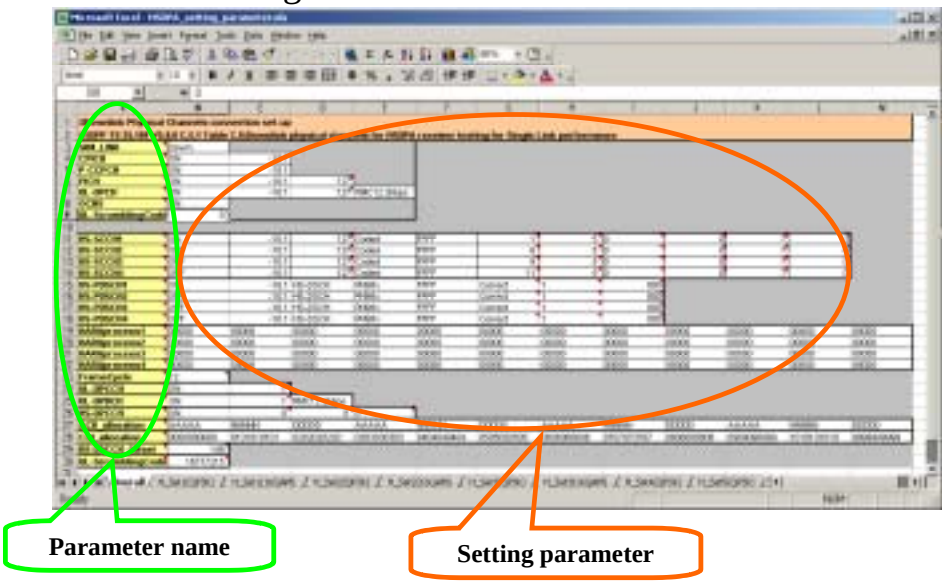
Opens the setting file with Text Editor or Excel and change parameters.
Refer to [Waveform creation procedure 3] for the detail of parameter setting range.

Setting screen in the Plain Text format



Waveform creation procedure 2-2

Setting screen in the Excel format



Waveform creation procedure 3-1

The detailed setting range of a parameter : Downlink 1/2

Name	Setting parameter
CPICH	Channel : ON/OFF Channel Power : -40.0 [dB] to 0.0 [dB] Channelization Code: 0
P-CCPCH	Channel : ON/OFF Channel Power : -40.0 [dB] to 0.0 [dB] Channelization Code : 1
P-SCH, S-SCH	Channel : ON/OFF (Dependent on the setting of P-CCPCH) Channel Power of P-SCH : "P-CCPCH setting power"– 3.0 dB Channel Power of S-SCH : "P-CCPCH setting power"– 3.0 dB
PICH	Channel : ON/OFF Channel Power : -40.0 [dB] to 0.0 [dB] Channelization Code : 0 to 255
DL-DPCH	Channel : ON/OFF Channel Power : -40.0 [dB] to 0.0 [dB] Channelization Code *1 : 0 to SF-1 SF (Spreading Factor) varies depending on the setting of DCH format as below. RMC12.2kbps = 128 RMC64kbps = 32 RMC144kbps = 16 RMC384kbps = 8 AMR1/AMR2/AMR3 = 128 ISDN = 32 DCH format *1 : RMC12.2kbps / RMC64kbps / RMC144kbps / RMC384kbps / AMR1 / AMR2 / AMR3 / ISDN
OCNS	Channel : ON/OFF Power : The value that brings the total power to 0 dB when it is combined with all other channels whose channel setting is ON. Composed of 6-code DPCH. Refer to 3GPP TS25.101 C.5.2 OCNS Definition for detail. When OCNS is OFF, total power becomes 0dB in the state the level setting ratio of each channel is maintained.
Scrambling Code	0 to 8,191

*1: RMCxxxkbps: Be based on 3GPP TS25.101 Release5 A.3 DL Reference Measurement Channel.
AMR1/AMR2/AMR3: Be based on TFCS=#1/2/3 of 3GPP TS25.944 4.1.1.3.1.2 Example for 12.2kbps data.
ISDN: Be based on 3GPP TS25.944 4.1.1.3.1.6 Example for 64kbps data

Waveform creation procedure 3-2

The detailed setting range of a parameter : Downlink 2/2

Name	Setting parameter
HS-SCCH	Number of channels : 4 Channel : ON/OFF Channel Power : -40.0 [dB] to 0.0 [dB] Channelization Code : 0 to 127 Data Type : PN9fix *2 / PN15fix *2 / 16bitRepeat / Coded 16bitRepeat Data : 0000 to FFFF (hex) Code Offset : 1 to 15 Multi-code Number : 1 to 15 Modulation : 0 (QPSK) or 1 (16QAM) Transport-block Size Information : 0 to 63 Redundancy and constellation version : 0 to 7 UE identity : 0 to 65,535
HS-PDSCH	Number of channels : 4 Channel : ON/OFF Channel Power : -40.0 [dB] to 0.0 [dB] Data Type : PN9fix *2 / PN15fix *2 / 16bitRepeat / HS-DSCH HS-DSCH Information data : PN9fix / PN15fix / 16bitRepeat 16bitRepeat Data : 0000 to FFFF (hex) CRC Error insertion : Correct / Fail Number of HARQ Processes : 1 to 8 Virtual IR Buffer Size : 800 to 304,000
HARQ process	Number of process cycle : 1 to 12 frame Transmission and DTX edit per sub-frame.

*2: PN9fix and PN15fix are PN9/PN15 data reset for every sub frame.

Waveform creation procedure 3-3

The detailed setting range of a parameter : Uplink

Name	Setting parameter
DPCCH	Channel: ON/OFF Channel Power (βc): 1 to 5 Channelization code: 0 (Phase Q)
DPDCH	Channel: ON/OFF Channel Power (βc): 1 to 5 Channelization code: SF/4 (Phase I) Speading Factor changes depending on the setting of DCH_format. RMC=12.2kbps: SF=64 RMC=64kbps: SF=16 RMC=144kbps: SF=8 RMC=384kbps: SF=4 AMR1/AMR2/AMR3: SF=64 ISDN: SF=16 DCH format *3: RMC12.2kbps / RMC64kbps / RMC144kbps / RMC384kbps / AMR1 / AMR2 / AMR3 / ISDN
HS-DPCCH	Channel: ON/OFF ACK Power: ΔACK=0 to 8 NACK Power: ΔNACK=0 to 8 CQI Power: ΔCQI=0 to 8 Channelization Code: 64 (Phase Q) Number of process cycle: 1 to 12 frame NARQ-ACK transmission pattern (ACK, NACK/DTH) and CQI transmission pattern (0 to 30 and DTX) can be edited per sub-frame. The timing offset of HS-DPCCH and DPCCH can be specified.
Scrambling Code	0 to 16, 777, 215

*3: RMCxxxkbps: Be based on 3GPP TS25.104 Release5 A.2 UL Reference Measurement Channel.
AMR1/AMR2/AMR3: Be based on TFCS=#1/2/3 of 3GPP TS25.944 4.1.2.2.1.2 Example for 12.2kbps data.
ISDN: Be based on 3GPP TS25.544 4.1.2.2.1.6 Example for 64kbps data.

Waveform creation procedure 4

Save of a setting file

The setting file in the csv format that is edited with Text Editor or Excel is saved in the form of a csv file.

When editing the reference parameters for setting files of the Excel format and saving them, select [Save as…], specify [*.csv] for [Save as type] and click [Save] in the state edited sheets are selected. (right)

Use one-byte alphanumeric characters (8 letters max. except the extension) for a file name.

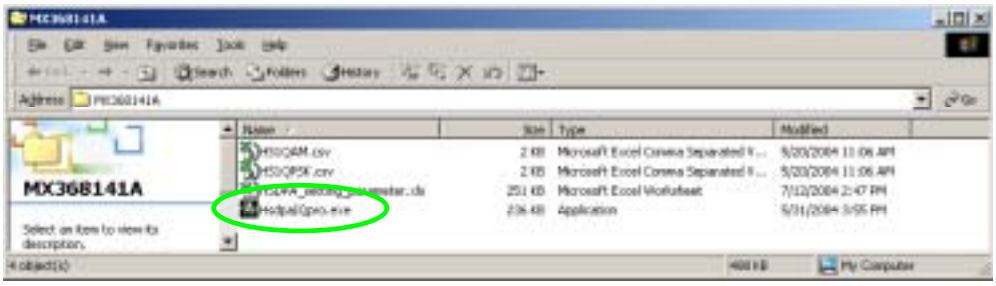
Warning message (right) is displayed and the selected sheet is saved when "OK" is clicked.

Waveform creation procedure 5-1

Conversion of a setting file into waveform data : Startup of IQproducer

HSDPA IQproducer converts the previously-created setting file(.csv) into the waveform data that can be used in MG3681A.

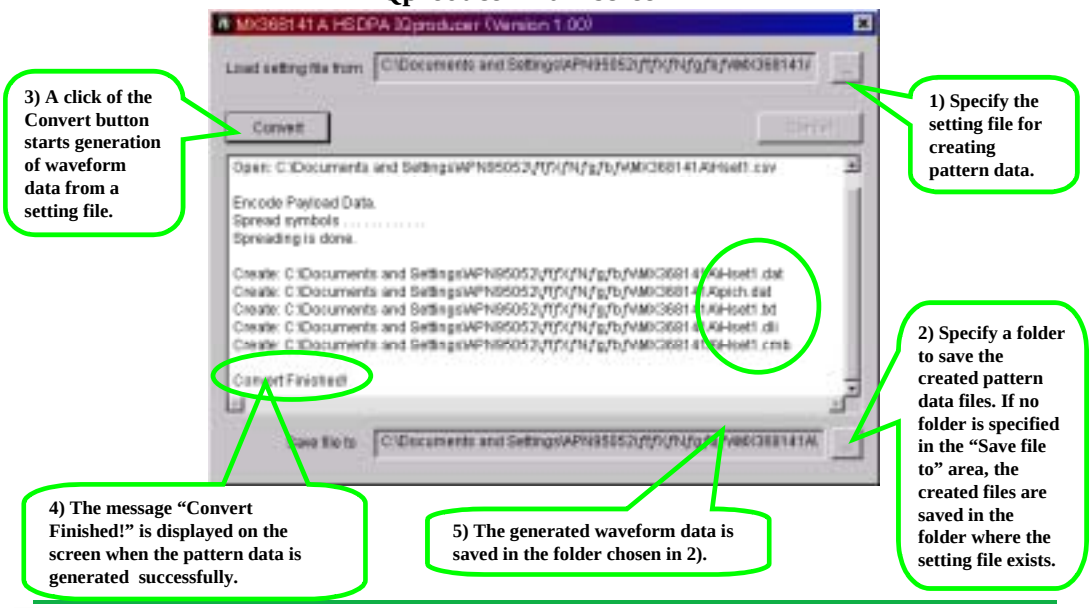
IQproducer starts up when "HsdpaIQpro.exe" below is double-clicked.



Waveform creation procedure 5-2

Conversion of a setting file into waveform data : Conversion by IQproducer

IQproducer Main screen



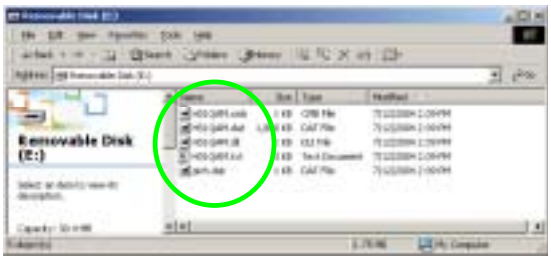
Waveform creation procedure 6-1

Load the waveform data into MG3681A

1) Copying of the waveform data generated by IQproducer to MG3681A requires PCMCIA-compliant ATA card or CF card(hereinafter called PC card). It is recommended to make a backup copy of the data when using a PC card attached to MX368041A or MX368041B.

2) Copy the created pattern data files to the root directory of the PC card.

•Downlink : 5 files
-.txt, -.dli, -.cmb, -.dat, pich.dat
•Uplink : 4 files
- .txt, -.dli, -.cmb, -.dat



Waveform creation procedure 6-2

Load the waveform data into MG3681A

3) Start up the MG3681A, and select W-CDMA for "System".
-[Digital Mod]
-System[Set] > CDMA[Set] > W-CDMA[Set]

4) Insert the PC card into the card slot on the rear panel of the MG3681A.

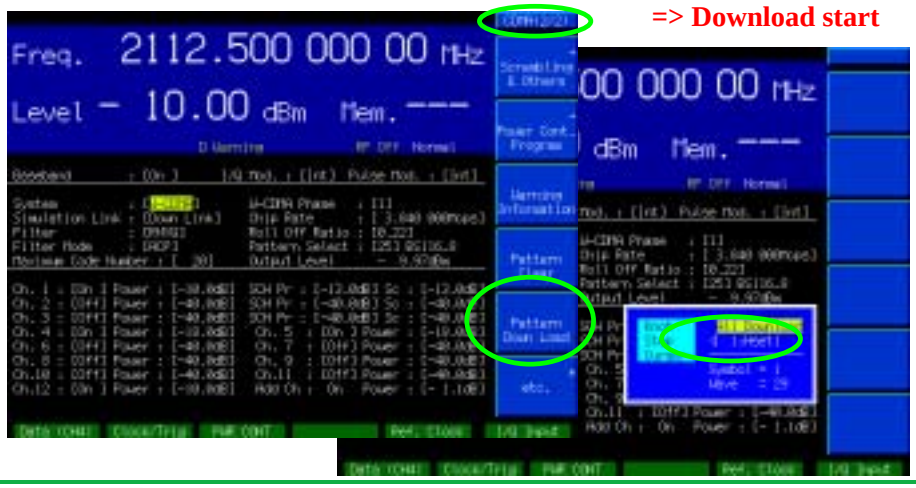
Waveform creation procedure 6-3

Load the waveform data into MG3681A

5) Pattern download is started.

- **[F6:etc.] On-screen menu list switches to 2/2.**
- **[F5:Wave Data Download]**
- **Select the waveform data to download and press [set].**

=> Download start



Waveform creation procedure 6-4

Load the waveform data into MG3681A

6) Select the waveform to output

- **Pattern Select [Set]**
- **Point the cursor to the waveform to output and press [Set].**

=> Waveform selection is completed.

Waveform creation procedure 6-5

Load the waveform data into MG3681A

7) Waveform output is started.

- [Digital] On

- [RF Output] On => Waveform output is started.

HSDPA waveform data

In addition to IQproducer, MX368041B-11 HSDPA Signal Pattern offers the waveform patterns as below as HSDPA waveform data.

- HSDPA BTS Test Model5

- DL FRC H-Set1~5 (fixed parameters)

The table below shows the differences between MX368141A IQproducer and MX368041A-11 HSDPA Signal Pattern.

Model - Baseband - Software - HSDPA application software	MG3681A - MU368040A - MX368041A/B - MX368141A	MG3681A - MU368040A - MX368041A/B - MX368041A/B-11
Type of software	IQproducer * Parameters can be changed.	Signal pattern * Parameters can not be changed.
Down-Link of HSDPA	Yes (H-Set 1-5 for UE side reception.)	Yes (H-Set 1-5 for UE side reception. Test Model5 for BS side transmission.)
Up-Link of HSDPA	Yes(HS-DPCCH)	No
Supported HSDPA channels	DL: HS-PDSCH DL: HS-SCCH UL: HS-DPCCH	DL: HS-PDSCH DL: HS-SCCH

Anritsu

Specifications are subject to change without notice.

ANRITSU CORPORATION
1800 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Phone: +81-46-223-1111
Fax: +81-46-296-1264

● **U.S.A.**
ANRITSU COMPANY
TX OFFICE SALES AND SERVICE
1155 East Collins Blvd., Richardson, TX 75081, U.S.A.
Toll Free: 1-800-ANRITSU (267-4878)
Phone: +1-972-644-1777
Fax: +1-972-644-3416

● **Canada**
ANRITSU ELECTRONICS LTD.
700 Silver Seven Road, Suite 120, Kanata,
ON K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

● **Brasil**
ANRITSU ELETRÔNICA LTDA.
Praca Amadeu Amaral, 27 - 1 andar
01327-010 - Paraiso, Sao Paulo, Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3886940

● **U.K.**
ANRITSU LTD.
200 Capability Green, Luton, Bedfordshire LU1 3LU, U.K.
Phone: +44-1582-433280
Fax: +44-1582-731303

● **Germany**
ANRITSU GmbH
Grafenberger Allee 54-56, 40237 Düsseldorf, Germany
Phone: +49-211-96855-0
Fax: +49-211-96855-55

● **France**
ANRITSU S.A.
9, Avenue du Québec Z.A. de Courtabœuf 91951 Les Ulis Cedex, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

● **Italy**
ANRITSU S.p.A.
Via Elio Vittorini, 129, 00144 Roma EUR, Italy
Phone: +39-06-509-9711
Fax: +39-06-502-2425

● **Sweden**
ANRITSU AB
Borgafjordsgatan 13 164 40 Kista, Sweden
Phone: +46-853470700
Fax: +46-853470730

● **Singapore**
ANRITSU PTE LTD.
10, Hoe Chiang Road #07-01/02, Keppel Towers,
Singapore 089315
Phone: +65-6282-2400
Fax: +65-6282-2533

● **Hong Kong**
ANRITSU COMPANY LTD.
Suite 923, 9/F., Chinachem Golden Plaza, 77 Mody Road, Tsimshatsui East, Kowloon, Hong Kong, China
Phone: +852-2301-4980
Fax: +852-2301-3545

● **P. R. China**
ANRITSU COMPANY LTD.
Beijing Representative Office
Room 1515, Beijing Fortune Building, No. 5 North Road, the East 3rd Ring Road, Chao-Yang District
Beijing 100004, P.R. China
Phone: +86-10-6590-9230

● **Korea**
ANRITSU CORPORATION
8F Hyun Juk Bldg. 832-41, Yeoksam-dong,
Kangnam-ku, Seoul, 135-080, Korea
Phone: +82-2-553-6603
Fax: +82-2-553-6604

● **Australia**
ANRITSU PTY LTD.
Unit 3/170 Forster Road Mt. Waverley, Victoria, 3149, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

● **Taiwan**
ANRITSU COMPANY INC.
7F, No. 316, Sec. 1, NeiHu Rd., Taipei, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

040602

Printed on 100% Recycled Paper

No.MX368141A-E-I-1-(1.00) Printed in Japan 2004-7 AKD