

Installation Note

**8719ET/ES, 8720ET/ES, and 8722ET/ES Network Analyzer
Option 1D5 High Stability Frequency Reference Upgrade Kit**



Agilent Technologies

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About the Upgrade Kit

Products affected.	8719ET/ES, 8720ET/ES, and 8722ET/ES Network Analyzers
Installation to be performed by	Agilent service center, personnel qualified by Agilent, or customer

If you need assistance, refer to [“Getting Assistance from Agilent” on page 12.](#)

Purpose

The Option 1D5 High Stability Frequency Reference Upgrade Kit provides a 50 MHz \pm 5 Hz (@ 25 °C \pm 5 °C) reference signal for a 8719ET/ES, 8720ET/ES, or 8722ET/ES network analyzer. This installation note describes the installation and performance verification procedures for the upgrade kit.

Items Included in the Upgrade Kit

The following table lists the parts included in the upgrade kit. Check the contents of your kit against this list. If any item is missing or damaged, contact Agilent Technologies. Refer to [“Getting Assistance from Agilent” on page 12.](#)

Table 1 Option 1D5 Upgrade Kit Contents

Description	Qty	Part Number
Frequency Reference Assembly	1	08753-60158
Frequency Reference Cable Assembly	1	8120-6458
Oscillator Bracket	1	08753-00078
BNC to BNC Jumper	1	1250-1859
1/2 x 28 BNC Connector Nut	1	0590-1310
Pan-head TORX Screw 3mm x 10	1	0515-0374
Pan-head TORX Screw 3mm x 6	1	0515-0430
Flat washer .505 IDNY	1	3050-1546
Lock washer .505 ID	1	2190-0068
Installation Note	1	08720-90406

Required Equipment

The following table lists the equipment, tools, and supplies necessary to verify the operation of the Option 1D5 upgrade kit.

Table 2 Required Equipment

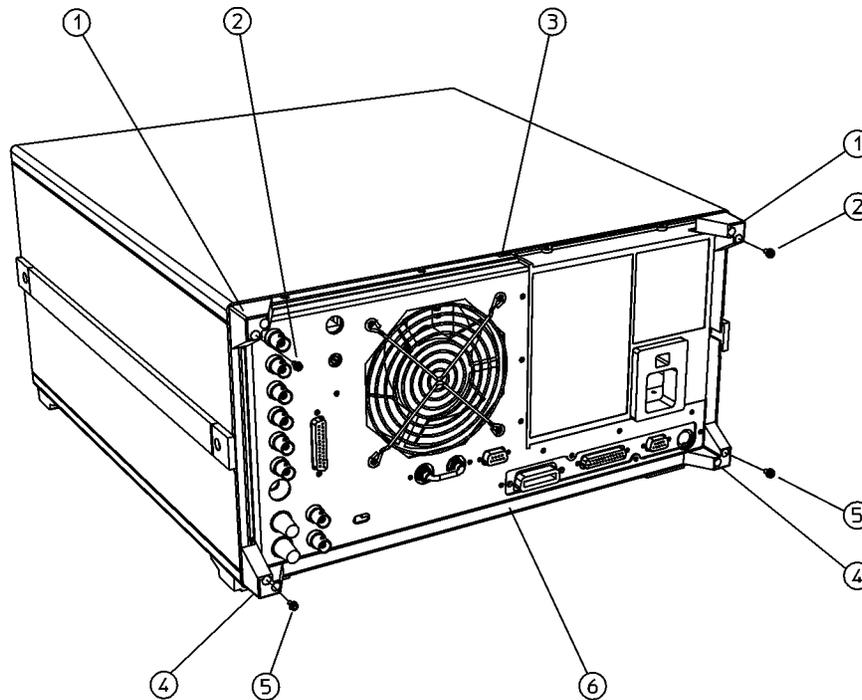
Item	Part/Model Number
Frequency Counter	5343A
BNC to BNC Cable Assembly	8120-1840
Adapter Type-N (m) to BNC (f)	1250-1535
T-10 TORX screwdriver	
T-15 TORX screwdriver	
T-20 TORX screwdriver	
3/16-inch hex-nut driver	
9/16-inch hex-nut driver	
ESD (electrostatic discharge) grounding wrist strap	
8719ET/ES, 8720ET/ES, and 8722ET/ES Service Manual	08720-90397

Installation Procedure for the Upgrade Kit

Remove the Bumpers and Covers

1. Disconnect the power cord.
2. Remove the top cover (refer to [Figure 1](#)):
 - a. Remove the upper bumpers on the rear of the analyzer (item 1), by loosening the attaching screws (item 2).
 - b. Loosen the top cover screw (item 3).
 - c. Slide the cover off towards the rear of the analyzer.
3. Remove the bottom cover:
 - a. Turn the analyzer upside-down.
 - b. Remove the remaining two bumpers on the rear of the analyzer (item 4) by loosening the attaching screws (item 5).
 - c. Loosen the bottom cover screw (item 6).
 - d. Slide the cover off towards the rear of the analyzer.

Figure 1 Removing the Top and Bottom Covers

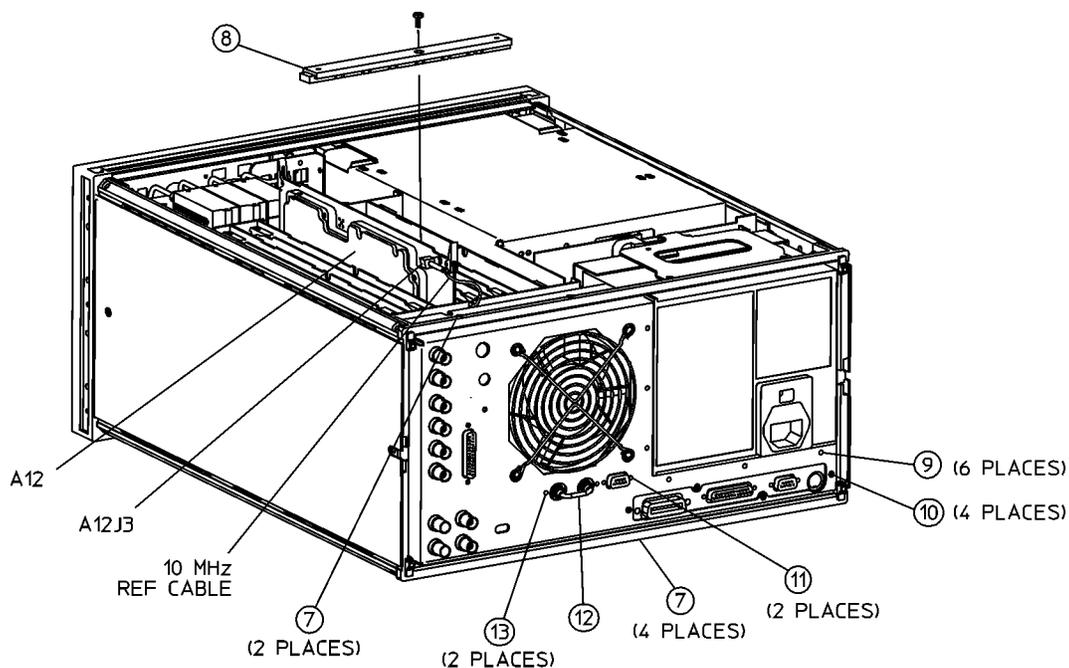


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Remove the Rear Panel Assembly

4. Remove the six screws (item 7) from the rear frame, two from the top edge and four from the bottom edge. (Refer to [Figure 2](#).)
5. Remove the screw that secures the pc board stabilizer (item 8) and remove the stabilizer.
6. Lift the reference board assembly (A12) from its motherboard connector and disconnect the cable from A12J3.
7. Remove the six screws (item 9) next to the preregulator from the rear panel as shown.
8. Remove the four screws (item 10), surrounding the peripheral interface connectors, from the rear panel as shown.

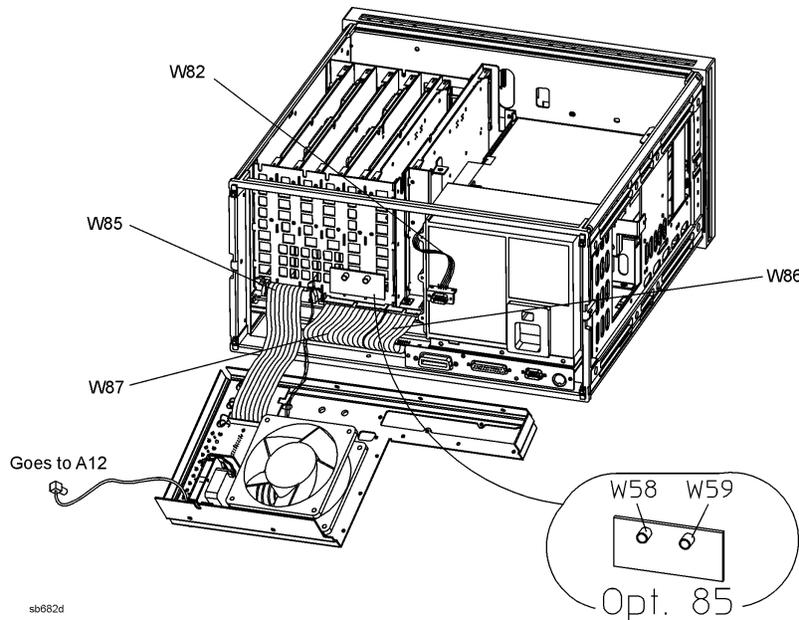
Figure 2 **Disconnecting the Rear Panel**



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9. Remove the two connector fasteners (item 11) from the VGA connector.
10. **Option 085 only:** Remove the jumper cable (item 12) and the two screws (item 13) from the SOURCE IN/OUT BLOCK.
11. Gently pull the rear panel away from the frame. (Refer to [Figure 3](#).) Disconnect the ribbon cable (W85) from the motherboard connector (A17J6) by pressing down and out on the connector locks. Disconnect the fan harness from the motherboard connector (A17J5).

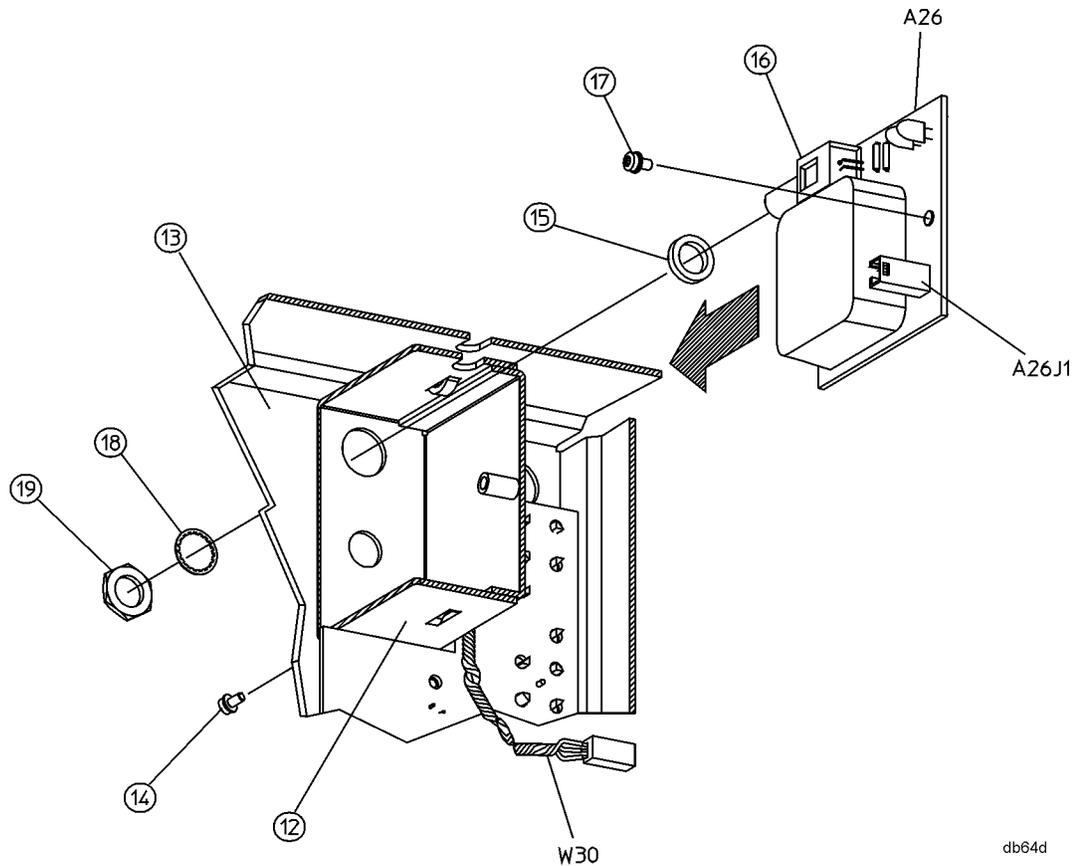
Figure 3 Removing the Rear Panel



Attach the Frequency Reference Assembly

12. Remove the two plastic hole plugs from the rear panel holes that are labeled: "10 MHz PRECISION REFERENCE" and "ADJ." This is the location on the rear panel where the high-stability frequency reference assembly will be installed.
13. Fasten the bracket (item 12) to the inside of the rear panel (item 13) with a screw (item 14) in the location shown. (Refer to [Figure 4.](#))
14. Place the plastic spacer washer (item 15) over the female BNC connector (item 16) on the high-stability frequency reference board (A26).
15. Slide the high-stability frequency reference board (A26) into the bracket (item 12) and secure it with the attaching screw (item 17).
16. Finish securing the assembly to the rear panel by attaching a washer (item 18) and nut (item 19) to the female BNC connector that protruded through the "10 MHz PRECISION REFERENCE" hole.
17. Connect the three-wire harness (W30) from the rear panel interface board (A16J3) to the high-stability frequency reference board (A26J1).

Figure 4 Assembling the High Stability Frequency Reference



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Reassemble the Rear Panel

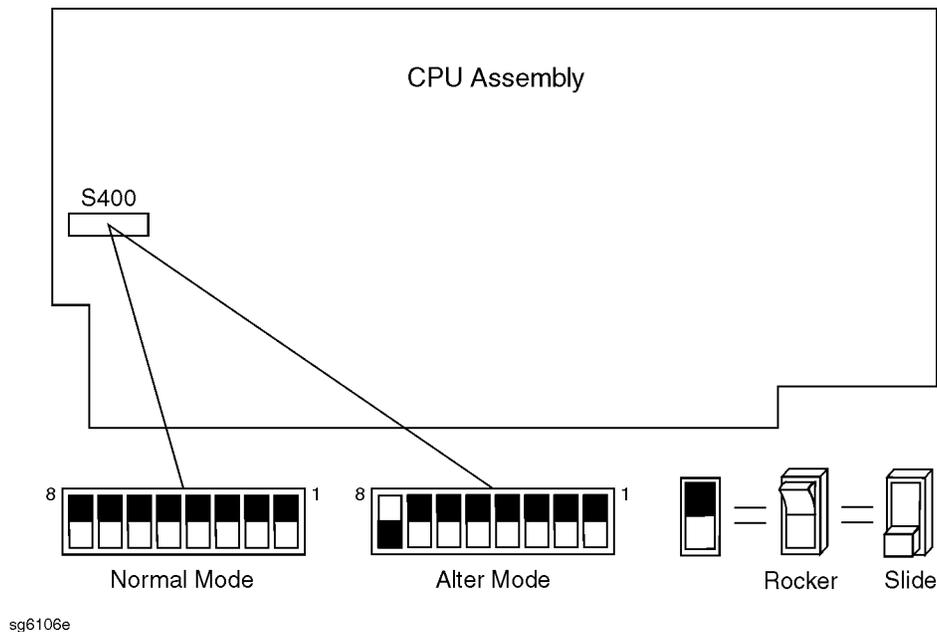
1. Replace the VGA connector with the two connector fasteners.
2. Reconnect the ribbon cable (W85) from the motherboard connector (A17J6). Reconnect the fan harness from the motherboard connector (A17J5).
3. Carefully fit the rear panel into the rear frame.
4. Replace the four screws that surround the connector interfaces on the rear panel. Replace the six screws that go next to the preregulator on the rear panel.
5. Reconnect W13 to A12J3 and reseal the reference board (A12) in its card cage slot. Be sure to route W13 through the notches provided in the card cage walls.
6. Replace the pc board stabilizer.
7. Finish securing the rear panel by replacing the six screws in the top and bottom edges of the rear frame.
8. **Option 085 only:** Replace the jumper cable and the two screws in the SOURCE IN/OUT BLOCK.
9. Replace the top cover.

Add Option 1D5 to the Firmware

Set the A7 Switch

1. Turn the network analyzer upside down.
2. Locate the A7 switch on the A7 CPU assembly at location S400. Refer to [Figure 5](#).

Figure 5 A7 Switch Location



3. Set the A7 switch to the Alter mode.

Make an Addition to the Displayed Options List

4. Press **(System)** **SERVICE MENU** **PEEK/POKE** **PEEK/POKE ADDRESS** **(1619001529)** **(x1)** **POKE** **(1)** **(x1)** **(Preset)**.
5. Verify that the analyzer displays "OPTION 1D5", by pressing **(System)** **SERVICE MENU** **FIRMWARE REVISION**.

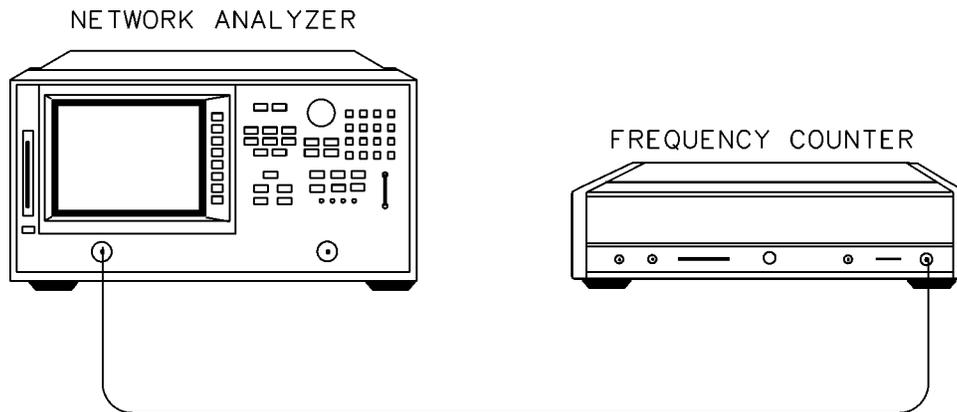
Return the A7 Switch to Normal

6. Return the A7 switch to the Normal mode.
7. Replace the analyzer bottom cover, and all the rear panel feet.

Verify the Frequency Reference Operation

1. Connect the equipment as shown in [Figure 6](#).

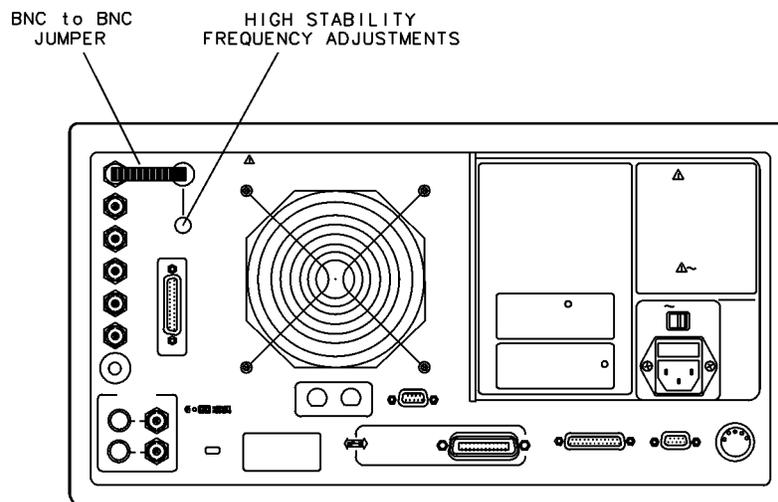
Figure 6 Frequency Reference Operation Test



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2. Press **System** **Menu** **CW FREQ** **50** **M/μ**.
3. Connect the BNC to BNC jumper (supplied with the upgrade kit) between the EXT REF and the 10 MHz High Stability Reference connectors. (Refer to [Figure 7](#).)

Figure 7 Location of the BNC to BNC Jumper and Adjustments



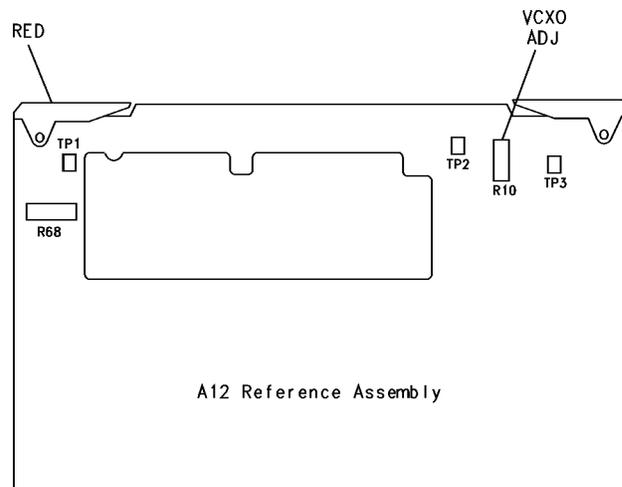
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4. Use a flat-head screwdriver to remove the screw that secures the high stability frequency adjustment as shown in [Figure 7](#). Insert a narrow screwdriver and adjust the high stability frequency reference potentiometer for a reading of $50 \text{ MHz} \pm 5 \text{ Hz}$.

In Case of Difficulty

1. Make sure that you had moved the A7 CC jumper and then returned it to the original position at the appropriate times.
2. Remove the BNC to BNC jumper.
3. Press **System** **Menu** **CW FREQ** **50** **(M/μ)**.
4. Locate the A12 Reference board assembly (board with red extractors). Refer to [Figure 8](#). Adjust the VCXO ADJ for a frequency counter reading of $50 \text{ MHz} \pm 500 \text{ Hz}$.

Figure 8 VCXO ADJ Adjustment Location



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5. Reconnect the BNC to BNC jumper as shown in [Figure 7](#). Insert a narrow screwdriver and adjust the high stability frequency reference potentiometer for a reading of $50 \text{ MHz} \pm 5 \text{ Hz}$.
6. If you cannot adjust the A12 board assembly to the frequency as specified, replace the A12 assembly.
7. If you cannot adjust for a frequency reading of $50 \text{ MHz} \pm 5 \text{ Hz}$, replace the A26 assembly. Repeat the "Frequency Reference Operation Verification" procedure.

Getting Assistance from Agilent

By internet, phone, or fax, get assistance with all your test and measurement needs.

Table 9 Contacting Agilent

Online assistance: www.agilent.com/find/assist		
United States <i>(tel)</i> 1 800 452 4844	Latin America <i>(tel)</i> (305) 269 7500 <i>(fax)</i> (305) 269 7599	Canada <i>(tel)</i> 1 877 894 4414 <i>(fax)</i> (905) 282-6495
Europe <i>(tel)</i> (+31) 20 547 2323 <i>(fax)</i> (+31) 20 547 2390	Australia <i>(tel)</i> 1 800 629 485 <i>(fax)</i> (+61) 3 9210 5947	New Zealand <i>(tel)</i> 0 800 738 378 <i>(fax)</i> (+64) 4 495 8950
Japan <i>(tel)</i> (+81) 426 56 7832 <i>(fax)</i> (+81) 426 56 7840	Singapore <i>(tel)</i> 1 800 375 8100 <i>(fax)</i> (65) 836 0252	Malaysia <i>(tel)</i> 1 800 828 848 <i>(fax)</i> 1 800 801 664
India <i>(tel)</i> 1 600 11 2929 <i>(fax)</i> 000 800 650 1101	Hong Kong <i>(tel)</i> 800 930 871 <i>(fax)</i> (852) 2506 9233	Taiwan <i>(tel)</i> 0800 047 866 <i>(fax)</i> (886) 2 25456723
Philippines <i>(tel)</i> (632) 8426802 <i>(tel)</i> (PLDT subscriber only) 1 800 16510170 <i>(fax)</i> (632) 8426809 <i>(fax)</i> (PLDT subscriber only) 1 800 16510288	Thailand <i>(tel)</i> (outside Bangkok) (088) 226 008 <i>(tel)</i> (within Bangkok) (662) 661 3999 <i>(fax)</i> (66) 1 661 3714	People's Republic of China <i>(tel)</i> (preferred) 800 810 0189 <i>(tel)</i> (alternate) 10800 650 0021 <i>(fax)</i> 10800 650 0121