TEMS Investigation 11.0.2

Release Note

About this Release

Release date: 2010-07-22

Corrected functions in release 11.0.2

- "User's Manual" volume missing from online help application. – Bug fixed (file naming issue).
- Common Cell Info of some LTE cells not decoded correctly. – Bug fixed.
- Unhandled exception error when using TEMS Positioning Tool. – The settings file for this tool ("TEMS.PinpointMap.PositioningTool.Settings.PositioningToolSettings.config") was stored under <install dir>\Application. It has now been moved to the correct location <install dir>\Application\Settings.
- IP packet capture failed on PC running Japanese Windows. – Language issue: TEMS Investigation looked for a RAS adapter called "WAN Miniport (Network Monitor)", and did not recognize its Japanese name. This bug has been fixed.
- While doing analysis on HSPA+ the information element 16QAM, 64QAM and QPSK are not showing the correct values. - Bug fixed.
- Missing layer 3 signalling on second network connect solved by new Samsung software for GT-B3710 (B3710XBJF1) and R900 (R900_LTEDE28A_USB)

Enhancements in release 11.0.2

- Support added for Novatel Wireless MC996D (non-MIMO software).
- GSM-only license for Sony Ericsson W995 phones modified to turn off visibility of WCDMA-related features more thoroughly in the TEMS Investigation user interface: for example, RAT lock and WCDMA scanning functions. Furthermore, this type of license locks the phone to GSM.
- Support added for Qualcomm TD9600 devices (having LTE capability)
- Improved PESQ computation for Samsung CDMA devices SPH-M320 and M330.
- Support added for Samsung GT-B3730.
- Support added for Sierra Wireless U312.

Corrected functions in release 11.0.1

- When replaying logfiles with WCDMA scan data from TEMS Pocket 7.2.2, the event More Than 3 Strong SCs was triggered only for the first UARFCN scanned. – Bug fixed.

Enhancements in release 11.0.1

- The Manual UE Configuration utility has been completely redesigned. The new user interface is found on a tab named "Device Configuration". On this tab you manually select the device type: for example, HSPA capable Qualcomm chipset based. A listing of the device ports (named as in the Windows Device Manager) then appears, and you associate each port with its function (Air/Data/AT/Ethernet interface). Since the assignment is purely functional with no reference to COM port numbers, the UE configuration is portable between PCs.

The new user interface is used for all supported devices concerned, except Datang devices, for which the old setup dialog still needs to be used. The old dialog, where "Air Interface Port", "Data Port", etc. are associated with fixed COM port numbers, is now relegated to a separate tab ("Port Configuration").

- Support of Qualcomm TD8220.
- Support of TEMS Pocket 8.1 logfiles.
- Support for Sharp 943SH.
- Detector created for HTC Touch Pro 2 IP connection application.
- Support for Sierra Wireless AC 503 software release M3.0.9.0.
- Support for DRT software version 02.02.13.

HTC Touch Pro 2 phones are now connectable in TEMS Investigation. However, these devices need some configuring before TEMS Investigation can detect them. The details of the configuration differ depending on the phone. For more information, see HTC Touch Pro 2 chapter below. Also note that a license is required for these devices. Please, contact our sales offices for offering.

- Support of HTC Touch Pro 2 Verizon EV-DO/UMTS UE.
- Support of HTC Touch Pro 2 AWS/ T-Mobile.
- Support of HTC Touch Pro 2 EU.
- Support of HTC Touch Pro 2 AT&T.

Known Bugs and Limitations

PC Application Related

Installation and Start-up

- When installing TEMS Investigation for the first time, it may take 10–20 minutes for the installation to complete (if .NET Framework 3.5 was not already present on the PC). A reboot follows when the installation has finished.
- When running multiple installations (different versions) of TEMS Investigation on the same machine, each installation needs to be put in its own directory. If the installation program encounters an existing installation, it will automatically suggest a different directory for the new installation. If you have mistakenly installed one product version on top of another, uninstall all applications and then reinstall each application to a unique directory.
- In the course of the TEMS Investigation 11.0 installation, the HASP SRM key will be firmware upgraded to SRM version 5. While the upgrade is in progress, this is indicated by the HASP key LED blinking. If the blinking does not stop within one minute, the firmware upgrade has failed. You then need to restart the Sentinel HASP License Manager service in Windows, or reboot the PC.
- The application start-up time may be prolonged if slow network shares are mounted on the machine.
- If TEMS Investigation takes a long time to start up (more than about 45 seconds), the delay may be caused by the OS trying unsuccessfully to check the application's Verisign certificate. If a network has been detected, the OS will try to contact Verisign to verify that the certificate is not on the Certificate Revocation List (CRL). TEMS Investigation will not continue until this procedure times out.

There are two ways to remedy this:

1) Open up your proxy to enable access to the Certificate Revocation List. The details of how to accomplish this may vary between countries.

2) Turn off the certificate revocation check in Internet Explorer:
- Open Internet Explorer and select Internet Options from Tools menu.
- On the Advanced tab, under Security, uncheck the option “Check for publisher’s certificate revocation” and click Apply.

(This procedure can be automated by the use of Group Policies.)

Application Use

Note: PC settings and hardware capabilities that are checked by the Computer Diagnostics utility are not covered here. See the Getting Started Manual, chapter 5.

- User-created workspaces from previous versions of TEMS Investigation need to be recreated. New workspaces are supplied with the application.

- A separately powered USB 2.0 hub is strongly recommended for drive tests. That is, the USB hub should not be powered through the USB port alone. Depending on the type and number of devices connected, the hub may otherwise not be able to deliver sufficient power. It needs also to be stressed that an uninterrupted USB connection between PC and device is vital for successful recording of realtime measurement data.

- The number of equipment icons on the status bar (bottom right) may sometimes become inconsistent with the combo box on the main window toolbar (top left). This may occur after connecting and disconnecting devices a number of times.

- The GPS icon in the application status bar may sometimes turn red during data collection, although position reporting from the GPS device is satisfactory.

- Some GPS units may be erroneously identified as a “MS Serial Ballpoint”. In Windows XP, perform the following steps:

  1) With Administrator privileges on the PC, choose Start > Run > regedit.

  2) Navigate to HKEY_LOCAL_MACHINE > System > Current Control Set > Services > sermouse.

  3) Locate the entry “Start” and double-click on it.

  4) Change the value Data from 3 to 4. This will prevent Windows from identifying the GPS device as a mouse. Note, however, that leaving the setting Data = 4 will prevent you from identifying new mouse devices until you change the value back to 3.

- During logfile recording as well as during logfile replay, temporary files are created by the application to enable the user to browse the history of the logfile. These files can become very large (3–4 times the logfile size), the exact size depending on the number of devices connected to the application at recording time. The temporary files are named according to the format “temsn” and created in the Windows temp directory (default: C:\path\tmp, where the path is defined by the environment variable TMP; in Windows XP, the TMP variable can be modified from the Control Panel: System Properties > Advanced > Environment Variables). Make sure there is plenty of space on the disk where the temp directory resides. The temporary files are removed when you exit the application; however, if the application terminates abnormally, this might not happen. The files must then be removed manually.

- When using the pinpointing function, you must click the Pinpoint button before starting logfile recording, not the other way around.

- When you save a command sequence to an XML file, any user names and passwords (e.g. for FTP or HTTP servers) given in commands are saved with the file (encrypted). Note that another user who runs your command sequence will be accessing the server using the same user name and password.

- When running video telephony from a command sequence, the phone needs to be locked on WCDMA.
- Redial only works for calls made in a command sequence.
- iDEN voice calls cannot be automated with a command sequence.
- When running multiple command sequences at the same time, you need to be aware of potential device usage conflicts. For example, assigning Dial (for voice call) to the MS and Hang Up (for terminating a data connection) to the DC device of the same phone may cause unwanted behavior.
- Two command sequences that are run concurrently (each in its own Command Sequence window) cannot use the same DC device.
- Command Sequence tool: It may happen that a phone proceeds from a PS session command (such as KPI FTP DL) to the next command assigned to it without being detached from the PS network. This may cause the latter command to fail (potentially introducing artifacts in KPI statistics). If this problem occurs, it can be prevented by inserting an explicit PS Detach command (or a Wait For Event command with event = PS Detach) after the PS session command. This is to ensure that the PS Detach completes before the phone proceeds with its next task.
- When using the serving cell indication in the Map window to show the strongest scanned CPICH, this works only for the 1st UMTS frequency (the one decoded into the information elements named “1st”).
- In the WCDMA Data Line Chart, changing to a different MS does not update the Legend pane (bottom left) in the line chart window.
- The Channel Verification tool causes the Sony Ericsson W600i phone to disconnect, and moreover it cannot be reconnected until the application has been restarted.
- The WCDMA RLC throughput trace reporting period is not exactly 1 second as specified. The reporting period varies according to phone load and is typically around 1050 ms during high speed WCDMA PS activity.
- PESQ is not computed for the AMR-WB speech codec.
- When turning on all extended logs for Sony Ericsson, Motorola, and Qualcomm chipset based devices (without turning off something else), the load on TEMS Investigation may become excessive, and the application may freeze.
- Logfiles merged with uplink data (MTR) files may contain internal reports with erroneous timestamps.
- The phone must be locked to GSM when performing GSM Channel Verification with a WCDMA capable phone. How to set this lock (on Radio Access Technology) is described in the User’s Manual, chapter 16 (“Device Properties”).
- TEMS Investigation can handle only one NDIS device at a time, unless all of the devices are Sony Ericsson phones. (On the other hand, the application is capable of handling several RAS devices in parallel).
- IP packet capture/analysis stops after less than a minute when using multiple CDMA phones.
- During video streaming, if stripes appear in the picture, try changing the color setting to 16 colors in the Windows display settings.

Windows 7 Specific

- Windows 7 lacks proper support for running two concurrent data sessions against the same server (for example, two concurrent FTP download sessions). This is a limitation in the OS.
- User Access Control needs to be turned off to allow IP trace. It may also need to be disabled for other reasons depending on its configuration.

Windows Vista Specific

- User Access Control needs to be turned off to allow IP trace. It may also need to be disabled for other reasons depending on its configuration.

- An error dialog about writing in Windows registry appears when starting GeoSet Manager; .gst files can however still be created.

Device Related: General

- In Windows XP, some issues with poor uplink and downlink throughput can be resolved by manually adjusting the TCP window size. This setting is found in the registry under:
  HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\

  The ideal TCP window size for a given maximum bit rate is dependent on the network delay. Here is an example showing how to do the calculation.

  Suppose that:

  Maximum bit rate = 3.6 Mbit/s

  Network delay = 500 ms

  Maximum Segment Size (MSS) = Maximum Transmission Unit (MTU) – header size = 1500 – 40 = 1460 bytes

  Then:

  Bandwidth-delay product (BDP) = $3.6 * 10^6$ bit/s * 500 * 10^{-3} s = 1800000 bits, or 1800000 / 8 = 225000 bytes

  Unscaled TCP Receive Window (RWIN) = floor(Max Buffer Size / MSS) = floor(65535 / 1460) = 44.

  That is, 44 segments totaling 44 * 1460 = 64240 bytes is a good configuration for a connection with MTU = 1500 and MSS = 1460.

  To obtain the optimum scaled RWIN, multiply the unscaled RWIN by 2 repeatedly until the BDP is reached:

  64240 * 2 = 128480 (< BDP)

  128480 * 2 = 256960 (> BDP).

  Thus, given the above assumptions, the optimum RWIN = TCP Receive Window is 256960 bytes.

  You will need to restart Networking in Windows XP for the new TCP window size to take effect.

- Windows Vista and Windows 7 have a function for automatic tuning of TCP settings. Check whether that function is enabled as follows:

  1) Open a Command Prompt using the Run As Administrator option (right-click the Command Prompt item on the Start menu).

  2) Type “netsh interface tcp show global” and inspect the value returned for Receive Window Auto-Tuning Level.

  3) If this parameter is disabled, give the command “netsh interface tcp set global autotuninglevel=highlyrestricted” to enable it.

Phone Related

General

- When plugging in a hub with multiple phones for the first time, it may take Windows a long time (many minutes) to sort out and activate all of the phone drivers. It is wise to do this in the office, before starting TEMS Investigation. When all devices have installed, start TEMS Investigation and check that all devices are detected properly and can be connected in the application.

- Devices cannot be enabled (added) manually in TEMS Investigation until the automatic detect has completed. This occurs 30 seconds after the last Windows Device Manager update caused by the detect procedure.

Sony Ericsson

- Avoid mixing USB 2.0 (High Speed) and 1.1 (Full Speed) Sony Ericsson phones, as doing so will cause some SEMC devices not to communicate correctly over AT with TEMS Investigation.
  - USB 1.1 default Sony Ericsson phones are: Z750, C702 and W760.
  - USB 1.1 and 2.0 changeable Sony Ericsson phones are: C905 and W995.
- In Windows Vista, device drivers can take a while to get running after you plug in a Sony Ericsson phone, so that the detect may take some time to complete. (Look at the status indicator in the Equipment Configuration tool to view the current detect status for the device.)
- When connecting a USB hub with Sony Ericsson phones to a Windows Vista PC, the phone with the lowest port number in the USB hub is sometimes not detected. This is solved by unplugging and reinserting the phone.
- When using a USB hub with a Windows Vista PC for connecting Sony Ericsson phones, we recommend that you plug the phones into the USB hub one at a time.
- The driver software for the memory stick needs to be installed on the PC to avoid problems when connecting a phone that is turned off. If the K790/K800 has a memory stick, do as follows when first connecting the phone:
  1) Insert the USB cable.
  2) Wait for drivers to install.
  3) Unplug and insert again to make the memory stick driver install.
- If a Sony Ericsson TEMS Pocket phone is connected to TEMS Investigation and the cable is pulled, TEMS Pocket will remain disabled until either 1) the phone is restarted, or 2) the phone is connected again in TEMS Investigation and then disconnected normally in the application.
- When AMR-WB speech coding is used, the Sony Ericsson phone is unable to measure GSM C/I.
- When locking the phone on a WCDMA cell, the signal strength measurements will become invalid for other cells.
- The Pocket functionality in the phone remains disabled after removing the USB cable connection to the PC.
- GSM channel verification: 1) The phone must be on GSM before start of test, otherwise the test will stall and after 20 seconds an error “BCCH Lost” will be displayed. 2) The channel verification function attempts to disable handover on the phone, but this does not work for phones prior to W760i and C702.
- Sony Ericsson K600/W600: If CKPD is going to be used to execute video calls, it is necessary to disable the keylock first.

HTC Touch Pro 2

- HTC Touch Pro 2 phones are now connectable in TEMS Investigation. However, these devices need some configuring before TEMS Investigation can detect them. The details of the configuration differ depending on the phone (unbranded, AT&T branded, Verizon branded, etc.). Below, a brief description is given of what needs to be done.
- On all phones you need to activate tethering via USB. Tethering means using a mobile device as a modem to provide Internet access to an unconnected device -- in this case, the PC on which TEMS Investigation is running. The terminology used to refer to tethering differs between phones. On a Verizon branded phone,

activate the "Modem link". On other HTC Touch Pro 2 phones, activate "Internet Sharing". In each case, this operation creates ports in Windows that TEMS Investigation can detect.

- Of phones having the "Internet Sharing" function, only one phone at a time can be used with TEMS Investigation. This limitation does not apply to the Verizon branded phones.

- On all HTC Touch Pro 2 phones except Verizon branded ones, you also need to install TCP Router software. This is provided by Ascom in the form of a CAB file.

Qualcomm Chipset Based Phones and PC Cards

- Some Qualcomm chipset based commercial UEs may not have test reporting activated. The device may then be impossible to connect, or seem to be locked to GSM, and/or only deliver low-level reports. Please contact the UE vendor; Ascom is not authorized to change this behavior.

- The CPU load tends to be high or very high when performing EV-DO data sessions.

- The hardware information and the number of devices used are sometimes missing in the logfile information (accessed by clicking the Information [“i”] button on the Replay toolbar).

- PS Attach/Detach does not work with some data cards. This will cause KPI sessions to fail. The procedure is handled correctly by (for example) Option Fusion and Globetrotter GT Max devices.

- AT commands in command sequences are not always executed by Qualcomm chipset based devices.

- An inter-RAT handover can be performed without any handover command from the network. In this case, no event is generated, and pre-handover IE values are not cleared in presentation windows. For example, WCDMA IEs in the Line Chart WCDMA window do not become invalid after handover to GSM, but freeze at their final values (flat lines drawn in chart).

- If video calls are iterated, a Wait command (at least 5 seconds) must be present after the End Call command. This is needed for the camera to initialize and for the phone to enter the correct state for the next video call.

- When an Ericsson Fixed Wireless Terminal is connected, it is not possible to do data service testing with any other devices at the same time.

- Care needs to be taken when using the NV interface to write to a Qualcomm chipset based device, since an inappropriate NV write may damage the device.

- If a Qualcomm chipset based device is not detected by TEMS Investigation, although it is built on a supported chipset, you can run the ManualUEConfig.exe utility to help TEMS Investigation recognize the device. This utility is found under <TEMS Investigation install dir>\Application. See the User’s Manual, section 6.7 for details on how to operate the utility.

Nokia NTM3 Phones

- When the Nokia phone switches from GSM to WCDMA, GSM values remain in TEMS Investigation presentation windows. These are old values and linger because Nokia NTM3 phones stop reporting on GSM after the switch.

- If you encounter problems connecting one of these phones in TEMS Investigation, there is a need for a power reboot of the phone.

- When locking the Nokia phone on a band, this action should be preceded by disabling the band lock (“All bands supported” option). If you click OK between selections of different bands, the phone will lock on all bands that you have selected at some point.

- When WCDMA band lock is enabled, any attempt to access a cell on any other WCDMA band will result in that cell being barred for approximately 20 minutes. Therefore you cannot immediately go back to the band you

were on before applying the band lock (or to a cell on that band). Furthermore, if the phone is locked on a WCDMA band and you lock on a different band, then release that lock, you will get no substantial phone logs for 20 minutes. For the above reasons, if you do not want to wait through the 20-minute period, it is recommended that you restart the phone before locking on a different WCDMA band or releasing the band lock.

Nokia 6280/6680

- The Nokia 6280 and 6680 phones cannot perform a dialup with the DC device immediately after a call has been performed with the MS device. If the phone is disconnected in between, the dialup will work.

Nokia 6125

- If the phone does not recognize the network or otherwise behaves strangely, a master reset of the phone may help:
  - Select Menu > Settings.
  - Scroll down to Restore factory settings.
  - Enter security code 12345.
  - Power cycle the phone.

Nokia 6086

- Too long SSID strings will be shown truncated (to 12 characters).

Motorola E1000/E1070/Razr V3xx

- EFEM (Enhanced Field Engineering Mode) needs to be disabled when running TEMS Investigation. To do this, push the middle menu button and then the left menu button, and set Availability of EFEM Screens to Off.

- The Lock to RAT feature in Motorola Razr V3xx NA (US) does not support the GSM 900/1800 bands.

LG U960

- It is not possible to run video telephony from a command sequence.

AQM Module Related

- If the USB connection is broken during AQM measurement, the PC application may need to be restarted to enable reconnect of phones.

- When running AQM measurements, it is recommended to use the Start Recording and Stop Recording commands in the command sequence to ensure that each logfile contains a full call sequence. Automatic swapping of logfiles is not recommended, as this can cause the merge mechanism to fail.

- PESQ calls may fail with error message “3 AQM Module errors”. This message is shown when the PC application has tried to contact the AQM module three times and failed on all occasions. This can be caused for example by the module being physically disconnected from the USB port or by the module not responding. The proper procedure when this happens is either to reset the AQM module using the reset button located on the back of the module, or to restart the module by disconnecting and connecting power. The AQM module then needs to be paired again with its phone. This is done from the Equipment Configuration window by right-clicking the phone, choosing Select AQM Module, and then choosing the correct module.

Failures of this kind are also recorded in the logfile in the form of error messages indicating that the connection to the AQM module has been lost. If such failures occur frequently, this indicates a bad USB connection or power cable.

Scanner Related

General

- Starting several scans in rapid succession (e.g. pilot scan and RSSI scan) may cause TEMS Investigation to stop updating scan data, and possibly even hang the application. The workaround is to wait until one scan starts returning data before starting another.

DRT 4301/4301A/4301A+

- The DRT scanner will reboot after a period of time if it is connected via a LAN and is detected by multiple TEMS Investigation users. The scanner API does not support multiple connections.

PCTel SeeGull LX/EX

- If you do not disconnect the scanner properly from within TEMS Investigation, problems may arise when you try to connect it again. For example, if you remove the cable from the serial port without first disconnecting the scanner in the application, measurements will continue to run in the scanner, and when it is connected to the port again the connect might fail. There are two ways to solve the problem: either connect the scanner manually in TEMS Investigation, or turn the scanner off and on to make the connect function work again.

- When plugging in a PCTel SeeGull LX scanner that uses a serial connection, click the Refresh button in the Equipment Configuration window to ensure that the scanner is detected.

- With some PCTel scanners only 2560 measurement points can be allocated for spectrum scanning, even though the scanner in fact has more measurement points available.

- The PCTel scanners may sometimes report many scan drop messages. The scanner uses this message to tell the host how many scan data messages were dropped and not delivered through the data link. Automatic scan data is dropped when the scanner is scanning faster than the data can be delivered through the data link, causing the pipeline to overfill.

- For EV-DO scanners, the “Use Pilot Increment” option is not available.

- When setting up a follow phone scan in CDMA, all fields in the setup dialog must have some value set, otherwise you cannot click OK. Enter dummy values in the dialog as needed.

- For the PCTel SeeGull EX scanner, version 2.0.1.0 and later, be sure to install the driver delivered with TEMS Investigation. Do not install any driver provided on PCTel’s web site. The reason is as follows: If you have PCTel’s own driver installed, then if the scanner is connected in TEMS Investigation and you pull its cable, the scanner port will not disappear from Windows and thus not from the TEMS Investigation user interface either. The driver delivered with TEMS Investigation contains a modification that removes the scanner port in the situation just described.

GPS Related

- While in dead reckoning mode, Garmin Street Pilot 2650 labels its calculated positions as invalid in the PC interface yet presents the positions on its display without any such indication. The positions calculated by dead reckoning are indeed mostly useful and enable TEMS Investigation to plot the route reasonably correctly when GPS coverage is temporarily lost. (To make use of the “invalid” positions you need to turn on an option in the GPS window properties; see the User's Manual, section 23.1.)

- The events GPS Connected and GPS Disconnected are intended for drive testing and are generated only during recording. They do not appear during replay and postprocessing.

- To connect the Nokia LD-3W Bluetooth GPS device, first start up TEMS Investigation. Then connect the GPS logically in Windows, outside of the TEMS Investigation application. Only after this can the GPS be successfully connected in the Equipment Configuration tool.

- If the power is lost on a Bluetooth GPS device the GPS or PC application need to be restarted in order to reconnect.

- The Travel Pilot cannot be used in conjunction with the Swap logfiles function.

Call Generator Related

- The Call Generator installation requires an English-language edition of Windows.

TEMS UDP Server Related

- If the following error message appears when the server is starting up: “Error 1053: The service did not respond to the start or control request in a timely fashion”, do one of the following (the two procedures have the same effect):

  1) Remove the internet cable. Start the service. Plug in the internet cable.

  2) Open a command prompt and type “ipconfig/release”. Start the service. At the command prompt, type: “ipconfig/renew”.

Contact Information

For customer support contact information, please visit our website on the Internet: www.ascom.com/networktesting

Appendix

OPEN SOURCE LICENSING INFORMATION

The USB driver (libusb0) used for AQM module is part of the open source libusb Windows project. This project can be found on the Internet at http://libusb-win32.sourceforge.net. The libusb-win32 project retains all rights and copyrights to the libusb-win32 code. The library (DLL) is distributed under the terms of the GNU Lesser General Public License (LGPL) and the driver is distributed under the terms of the GNU General Public License (GPL). The LGPL and GPL license text can be found on TEMS Investigation driver installation CD. The source code for libusb-win32 is freely available and can be found on the TEMS Investigation driver installation CD.