

E4406A VSA Firmware History

Rev: 15 August 2007

Note: This is a list of key enhancements and changes at the time of publishing.

A.10.08 (28 June 2007)

W-CDMA / HSDPA / HSUPA (Options BAF, 210) changes to this release:

Fixes / Changes:

- CDP Measurement and Mod Accuracy (Reverse Link): Added support for when Bc/Bd = 1/15
- CDP (HSDPA): Fixed issue where non-zero tHD-DPCCH causes incorrect beta values

1xEV-DO (Option 204) changes to this release:

Fixes / Changes:

- Mod Accuracy and CDP (Reverse Link): Enhanced sync tolerance for the condition of low power in Pilot Channel

CDMA2000 / 1xEV-DV (Options B78, 214) changes to this release:

Fixes / Changes:

- Modulation Accuracy and Code Domain (Forward Link): Fixed issue where changing the sync type setting (F-Pich or TxDiv F-PICH) wasn't updated unless you exited the measurement and re-entered it.
- Modulation Accuracy and Code Domain (Forward Link): When synchronizing to the TxDiv F-PICH, the measurement now correctly calculates the phase reference point of the TxDiv F-PICH

A.10.07 (21 February 2007)

Basic (Standard option) changes to this release:

Enhancements:

- Added new PPHase parameter to calc:data:compress command to enable Phase and Amplitude vs. time measurements over a series of bursts. This is useful when calibrating GSM mobile handsets. :CALCulate:DATA0:COMPRESS? PPHase

WiDEN (Option HN1) changes to this release:

Fixes / Changes:

- Fixed BER crash

GSM and EDGE (Options BAH, 202, 252) changes to this release:

Fixes / Changes:

- GSM ORFS, EDGE ORFS, GSM PVT, EDGE PVT, Transmit Power: Updated auto-attenuation routine to only increase attenuation if an ADC overload is first detected.
- Added new PPHase parameter to calc:data:compress command to enable Phase and Amplitude vs. time measurements over a series of bursts. This is useful when calibrating GSM mobile handsets. :CALCulate:DATA0:COMPRESS? PPHase
- Fixed EDGE EVM crash when measurement set to external trigger with time slot = 0 and in continuous setting
- EDGE EVM: Fixed issue where Extreme Limits On/OFF key was missing in A.10.05 Firmware

W-CDMA / HSDPA / HSUPA (Options BAF, 210) changes to this release:

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Fixes / Changes:

- Added ability to turn RRC filtering off for CDP and Modulation Accuracy
- Added new SCPI command to turn on and off limit Lines
:CALCulate:SEMask:LLINe:STATe ON|OFF|0|1
- RHO: Masked Multi Carrier Sync menu when device set to MS
- MCP: Fixed issue where analyzer unexpectedly changed attenuator setting after switch from OBW measurement
- RHO (MS): For Compressed setting, fixed issue where phase reference did not match DPCCH.
- RHO (MS): Fixed crash when slot format set to SF0 with SF1 signal.

CDMA2000 / 1xEV-DV (Options B78, 214) changes to this release:

Enhancements:

- Added new SCPI command to turn on and off limit Lines
:CALCulate:SEMask:LLINe:STATe ON|OFF|0|1

1xEV-DO (Option #204) changes to this release:

Fixes / Changes:

- Added new SCPI command to turn on and off limit Lines
:CALCulate:SEMask:LLINe:STATe ON|OFF|0|1
- Modulation Accuracy (Reverse Link): added Full slot display and RRI calculation
- Modulation Accuracy (Reverse Link): Data channel gain limit increased to 30 dB from 10 dB
- CDP Measurement and Mod Accuracy (Forward Link): Active ID threshold optimized for the MAC channel. This fixes an issue where Mac channel active ID fails
- CDP Measurement (forward link): Fixed issue regarding wrong pilot channel phase estimation. This issue also contributed to Data / MAC channel active ID issues.
- Pilot channel phase slot by slot compensation improvement
- PVT: Burst search threshold level (dBm) now returned as 11th result for READ:PVT1?
- PVT: Fixed issue where pass / fail results may be different between VSA A.09 and VSA A.10.5 firmware.
- Mod Accuracy (Forward Link): Fixed pilot offset error introduced in A.10.05 Firmware
- PVT: Fixed issue where measurement didn't work correctly when idle slot threshold was set to 0 dB.

A.10.05 (14 April 2006)

1xEV-DO (Option #204) changes to this release:

New Features:

- Complete 3GPP2 1xEV-DO Revision A support in Forward Link and Reverse Link
- Slot-by-slot analysis function for AMC in MAC and Data channels with more robustness
- New traces and views in Code Domain: Code Domain Error, Slot Power, Code Symbol Demod Bits, Data Multiplexed Demod Bits
- Auto detection of active slot or idle slot with selective averaging in Mod Accuracy.
- Peak/Average Metric displays for easy Pass/Fail tests
- Provide all Rho results defined in 3GPP2 of both revision 0 and revision A

Enhancements:

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- Measurement name label is changed from Mod Accuracy (Composite Rho) to Mod Accuracy (Waveform Quality) to align with 3GPP2 standard conformance test
- RF Carrier Single/Multi selection removed because of addition of complementary filter that has roll-off factor ALPHA parameter.
Fixed Defects:
- TCDP: When changing format of demod bits (:CALC:TCDP:PACK OFF|PKM1) from default mode (off) to packed mode (PKM1), and doing a successive “fetch:tcpd12?”, the returned results were in the previous format.
- TRHO: Walsh Code Number on CDP graph in Mod Accuracy (Radio Type: MS) sometime shows the wrong Min Label

W-CDMA (Option #BAF / 210) changes to this release:

New Features:

- Added support for HSUPA for Code Domain Power and Mod Accuracy for both BTS (Downlink) and MS (Uplink). Note: Option BAF and 210 are required for HSDPA/HSUPA support
- Uplink E-DPDCH in spreading factor (SF) 2 and E-DPCCH can be demodulated in Code Domain and Mod Accuracy.
- Added Uplink power beta calculation based on DPCH/E-DPCH Configuration defined in 3GPP release 6
- Uplink Slot Format Auto Detection in Code Domain, Mod Accuracy, and Slot Phase.
- Custom predefined channels for active channel identification with remote SCPI commands in Code Domain, Mod Accuracy, and Slot Phase
- Selectable Start Slot No. in Code Domain, Mod Accuracy, and Slot Phase.
- Uplink manual setting for timing offset of HS-DPCCH in Code Domain.
- HSUPA Downlink channels (E-HICH, E-RGCH & E-AGCH) support in Code Domain and Mod Accuracy
- MICH (New in 3GPP Rel-6) code No. selection in Code Domain and Mod Accuracy
- DTX/Burst Detect On/Off selection in Mod Accuracy

Enhancements:

- Multi Carrier Sync is turned ON by default
- Bit Format Bin/Tri was changed into DTX/Burst Detect On/Off in Code Domain
- Added ability Feed sampled I/Q data as raw data source with the following new SCPI Commands: :SENSe:FEED:SOURce:STORE, :SENSe:FEED:SOURce:STORE:EXTErnal, :SENSe:FEED:SOURCe INPut|STOREd

Fixed Defects:

- Modulation Accuracy and Code Domain Power (Downlink) could not demodulate with a scramble code offset = 1 (The defect was only in PSA A.08 / PSA A.09 Firmware)
- Modulation Accuracy – Pass Fail indicator for RMS EVM was using Average RMS EVM result rather than “Peak Hold” RMS EVM result.
- Modulation Accuracy (MS) – IQ Symbol constellation would sometimes disappear
- Code Domain Power – SCH Suppress On/Off parameter was not taken into account for the long mode result.
- Modulation Accuracy: TSTD SCH sync did not function
- Spectrum Emission Mask: Manual attenuation would change to auto by changing measurements
- Modulation Accuracy and Code Domain Power: PICH(MICH) detection failed to find 6-symbol OFF period when the TestModel3 signal is compressed
- Modulation Accuracy and Code Domain Power: HS-PDSCH modulation scheme in Test Model 5 was being autodetected instead of always being shown as 16QAM
- Modulation Accuracy: When pressing the Display key when in I/Q Error view, the expected menu should be blank keys instead of the I/Q Measured Polar Graph’s display menu options
- Power vs. Time: Rotary Knob did not change Time Ref Offset

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GSM and EDGE (Option #BAH / 202 / 202) changes to this release:

----- New Features:

- EDGE EVM: When incoming signal is selected by "Timeslot" and the no burst is detected the error message should have been "Request Time Slot number not present" instead of "Signal Too Noise" (PSA only issue, E4406A not affected)
- GMSK and EDGE ORFS result metrics indicate incorrect "Sync" and "Trig" source in some cases (Radio Type : MS)

A.09.02 (28 June 2005)

1xEV-DO (Option #204) changes to this release:

----- New Features:

Support for 1xEV-DO Revision A (Higher Data Rates)

- New Physical Layer Subtype selection (0/1 for Rev 0 and 2 for Rev A)
- Active Channel Auto Detection for Subtype2. Predefined channel setting is also available for forced manual detection.
- Speed up of measurement demod engine

Code Domain Enhancements (Reverse Link):

- Adaptive Modulation Coding (AMC) signal support in symbol analysis
- Demodulated bits represent channel information (ex. DATA BPSK)
- Independent I/Q analysis allows to analyze BPSK modulated channels existing same I/Q code position with IQ combined condition analysis
- New Code Domain Power and Code Domain Error view (Provides visual view of CDP and CDE of each code)

Note: For older E4406As that start with serial prefix "US3" and that have the original CPU assembly (E4406-60040) with 160 MB of DRAM, the maximum reverse link CDP Capture Interval has been limited to 12 slots. For instruments with CPU assemblies E4406-60060 and E4406-60073 with 256 MB of DRAM, the maximum Capture Interval is 32 slots. An upgrade kit is available for older instruments to migrate to the newer CPU assembly. The kit is service center installable, and its part number is E4406-60238.

Code Domain Enhancements (Forward Link):

- Mac Channel base Code length to W128

Mod Accuracy Enhancements (Reverse Link):

- More view selections with Peak/Average Result Metrics and CDP with active channel table
- New selection of either half slot or 1 slot Rho/EVM calculation
- New Sync start slot number selection

Defect Fixes / Changes for 1xEV-DO (#204):

- 2.26: Under the advanced menu, the default ADC range for instruments equipped with a 14 bit digital IF is now correctly displayed.
- 2.74: PVT: Auto couple of Y axis is now functional and is reset by restarting the measurement
- 2.5: CDP: Changed meas offset numbering to step by half slots (0.5)

GSM and EDGE changes to this release (Options BAH, 202, 252):

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New Features:

EDGE EVM:

- Additional polar modulation analysis capability has been added. The polar modulation analysis function helps to analyze the time delay adjustment between Amplitude path and Phase path on Polar modulation. The Polar Mod Sync selection key is a new selection in the Meas Setup, Burst Sync menu. If you select Polar Mod Sync, the instrument will search the training sequence on the amplitude path and phase path and try to sync. The Polar Modulation choice was added to the following command:
[:SENSe]:EEVM:BSYNc:SOURce RFBurst|PModulation|TSEquence|NONE
The following new command was added for Polar Modulation Sync:
[:SENSe]:EEVM:BSYNc:PModulation:ALIGnment OFF|ON|0|1

Defect Fixes / Changes for GSM & EDGE (Options BAH, 202, 252):

- 2.47: PFER: Fixed issue where last demod bit for phase error with frequency fluctuates under certain conditions.
- 2.78: ORFS: Updated default setting to be 15 "1's" instead of 14 "1's" for the following command to choose which offsets are on (Note: This command was added in A.08.10 firmware):
[:SENSe]:ORFSpectrum:LIST:MODulation:STATe <OFF|ON|0|1>
- 2.130 ORFS: Fixed issue where BTS absolute limits were not considered when in the swept view.
- 2.72: ORFS: Fixed issue where "READ:ORFS6?" and "READ:EORF6" did not zero the values for the modulation results when making Switching only measurements and for the switching results when making Modulation only measurements
- 2.73: ORFS: Fix issue where offset limits were not correctly applied if you turned off offsets in between other offsets that were turned on. (For example, the offset limits for offset E are now correctly applied if you only turn on offsets A,B, and E.)
- 2.149: EDGE EVM: When a burst is not present when selected by the "Timeslot" parameter, the correct error message, "Requested timeslot number not present," is displayed instead of the incorrect message, "Signal too noisy."
- 2.151: ORFS: Fixed issue where sometimes the displayed sync and trigger indications sometimes aren't displayed correctly.

W-CDMA (Option #BAF) changes to this release:

New Features:

Code Domain Power and Modulation Accuracy

- Improved demod in the presence of adjacent carriers. Added a new Multi Carrier Sync On/OFF key under the Advanced Meas Setup menu.
(Note: If Sync Type is set to Symbol Based, this function is not available.)

Defect Fixes / Changes for W-CDMA (#BAF):

- 2.29: Mod Accuracy: Fixed issue where SSCH power was shown as exactly the same as PPSCH power. (Note: there is no remote user interface query for these values).
- 2.58: Mod Accuracy: Fixed issue where Capture Time Summary and Peak / Average Metrics view used arithmetic averaging instead of log averaging for dB and dBm values.
- 2.128: CDP Uplink Compressed mode: Fixed issue where some slot bit patterns are inverted
- 2.129: CDP TX Diversity: Fixed issue where demod bit results fail when in packed mode.
- 2.146: CDP: You can now change the Time Reference Offset using the front panel knob.
- 2.26: Under the advanced menu, the default ADC range for instruments equipped with a 14 bit digital IF is now correctly displayed.
- 2.125: CHP: Fixed crash when you select a large sweep time value.

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cdma2000 (Option #B78) changes to this release:

New Features:

Code Domain Power and Modulation Accuracy

- Improved demod in the presence of adjacent carriers. Added a new Filter Alpha button. The following four new SCPI commands were added:
[:SENSe]:CDPower:ALPHA <float>; [:SENSe]:CDPower:ALPHA?
[:SENSe]:RHO:ALPHA <float>; [:SENSe]:RHO:ALPHA?
(Note: The old manual user interface key <RF Carrier Single / Multiple> under the <mode setup> <demod> menu has been removed since it is no longer necessary)

Defect Fixes / Changes for cdma2000 (Option B78):

- 2.26: Under the advanced menu, the default ADC range for instruments equipped with a 14 bit digital IF is now correctly displayed.

A.08.10_Rel_2 (7 March 2005)

GSM and EDGE changes to this release (Options BAH, 202, 252):

Defect Fixes / Changes for GSM & EDGE:

- 2.67: Fixed non-functional PASS/FAIL indicator when making GSM or EDGE ORFS Switching measurements

A.08.10 (16 December 2004)

New Wireless LAN (802.11b/g) Measurement Personality Added (Option H17):

Measurements available in the Wireless LAN (Option H17) mode:

- Transmit Output Spectrum
- Average Output Power
- Carrier Suppression

W-CDMA (Option #BAF) changes to this release:

Defect Fixes / Changes for W-CDMA (#BAF):

- 038: Code Domain Power: When capturing 3 frames, playback is now all three frames instead of just the first two.
- 029: Mod Accuracy Code Domain View: SSCH power levels now shown correctly instead of showing copy of PSCH power levels.
- 032: Power Control: Fixed firmware crash when changing capture interval when in single measure (not continuous) setting.

GSM/ EDGE (Options #BAH, 202, 252) changes to this release:

Defect Fixes / Changes for GSM/EDGE:

- 260: Fixed crash in EDGE EVM measurement when an invalid EDGE signal is applied causing a sync word not found error. This defect / crash was introduced in A.08.05 firmware.

A.08.05 (12 November 2004)

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W-CDMA (Option #BAF) changes to this release:

----- New Features:

Code Domain Power:

- Active Channel Detection (Auto) is improved with more robustness (Slot-by-slot based)
- Capture & Playback Buffer Support by sharing the stored data between Code Domain Power and Modulation Accuracy measurements
- TSTD Antenna-1/2 sync modes have been added (Downlink)
- PICH handling has been enhanced (Note: PICH is normally detected as 7.5ksps because data contents include the same even and odd bits. This is specially handled and shown as 15ksps. This is limited to C8(16) only.) (Downlink)
- CDE measurement and view have been added for Code Domain
- Symbol EVM Analysis capability enhanced for Closed Loop Diversity Analysis
- Measurement/Calculation process indicator added. "Running" indicates that the analyzer is making the measurement; "Updating" indicates post-processing; "Completed" indicates completion of measurement. These labels are shown in combo bar just above AVG counter.

Modulation Accuracy:

- 15 slot measurement for EVM and PkCDE now support for 3GPP release 6 (Note: This feature requires that your instrument have either the E4406-60073 or E4406-60060 CPU assembly. Instruments with serial prefix US3948 and prior were not originally shipped with the E4406-60073 or E4406-60060 CPU assemblies.)
- Speed improvement for 15 slot (1 frame) capture
- Active Channel Detection (Auto) is improved with more robustness (Slot-by-slot based)
- Capture & Playback Buffer Support by sharing the stored data between Code Domain Power and Modulation Accuracy measurements
- TSTD Antenna-1/2 sync modes have been added (Downlink)
- PICH handling has been enhanced (Note: PICH is normally detected 7.5ksps because data contents include the same even and odd bits. This is specially handled and shown as 15ksps. This is limited on C8(16) only.) (Downlink)
- Transient period (25 us) Include / Exclude selection added (Uplink)
- Color indication for limit fail added in EVM Table View. Yellow shows worst value (within limit), and red shows limit fail.
- Measurement/Calculation process indicator added. "Running" indicates that the analyzer is making the measurement; "Updating" indicates post-processing; "Completed" indicates completion of measurement. These labels are shown in combo bar just above AVG counter.

Power Control:

- UE Phase Discontinuity measurement now supported as measure type of Slot Phase

Defect Fixes / Changes for W-CDMA (#BAF):

- 034: SEM: Fixed potential accuracy problem when center frequency is set < 571.5 MHz by only performing upper side mixing instead of the standard both side mixing. Note: E4406A uses both -side mixing for SEM to suppress mixing products, since E4406A fundamentally mixes to an IF of 321.4 MHz.
- 054: Mod Accuracy: SCH include On/Off in obsolete (always on) and has been removed. The 3GPP standard specifies SCH period should be included in calculating Modulation Accuracy. The Remote Command still exists for backwards compatibility but no longer changes the setting.
- 171: Mod Accuracy: Corrected Symbol rate returned for Read:Rho? Command
- 208: Mod Accuracy: STTD Time offset measurement now limits capture length to 1 slot (There is no benefit for longer capture and would just slow down measurement)

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- 110: Code Domain Power: Read:CDP12? now supports I only and Q only (BPSK) Demod bits. Previously it only supported IQ.
- 94: CDP: The X Reference value for Symbol Power Vs. Time and Code Domain windows for Quad View are now decoupled and can be changed independently.
- 151: CDP: Demod bits View calculated slot Number when Symbol Analysis tDPCH is set to Man now gives consistent results to Auto setting.
- QPSK EVM: I/Q Origin offset is now reflected in EVM result when EVM Result I/Q Offset is set to Std.

GSM / EDGE (Options #BAH, 202 , 252) changes to this release:

New Features:

Output RF Spectrum (ORFS and EDGE ORFS):

- Delta-to-limit result column added.
- Test Limit Manual User Interface added
- Added ability to choose Micro-BTS of M1, M2, or M3. The Absolute power limits for ORFS modulation is determined upon Micro-BTS selection.

Power Vs. Time (EDGE and GSM):

- Added ability to select Power Control Level
- Power Control Limit is now shown in the combo bar
- Added ability to set mask with External trigger input and trigger delay.
- Added support for TS1 and TS2 Access Burst sequences

EDGE EVM:

- Trigger to T0 measurement is now supported. The repeatability has also been improved over the EDGE PVT measurement trigger to T0 results.
- Multi-Carrier tolerant filter now supported
- Test Limits User Interface added for front-panel customization
- Improved frequency lock capability. Can now lock to signals more than 5 kHz off frequency. Before the algorithm couldn't lock past 400 kHz.

Phase and Frequency Error (PFER):

- Multi-Carrier tolerant filter now supported
- Test Limits User Interface added for front-panel customization

cdma2000 (Option #B78) changes to this release:

New Features:

Modulation Accuracy:

- Sync Type added to support Tx diversity (Antenna-2)

New WiDEN add-on to iDEN w/ Moto Talk personality (Requires Option #HN1)

Measurements support for WiDEN:

- Occupied Bandwidth
- ACPR
- Burst Power
- BER

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A.07.04 Release 2 (9 September 2004)

W-CDMA (Option #BAF) changes to this release:

- Modulation Accuracy: Removed 200 ns offset from time offset metric for instruments with 14 bit Digital IF assemblies (E4440-60025 and E4440-60195)
- Revision of W-CDMA personality reported in the show system menu is now version A.07.05. Core firmware and firmware versions of all other personalities are still version A.07.04.

A.07.04 (25 November 2003)

New HSDPA add-on to W-CDMA personality (Requires Option #210)

New Features:

Code Domain Power:

- Active ID auto detection support for HS-PDSCH (16 QAM / QPSK)
- Predefined Test Models – Downlink – TM5 with 2/4/8 HS-PDSCH
- Modulation Type Selection – Downlink – 16QAM now supported
- Demod Bits – Downlink – 16QAM channels (Binary / Hexadecimal demod display) support
- Uplink HS-DPCCH Beta value supported

Modulation Accuracy:

- Predefined Test Models – Downlink – TM5 with 2/4/8 HS-PDSCH now supported

W-CDMA (Option #BAF) changes to this release:

New Features:

Code Domain Power:

- Symbol Boundary (Active ID detection) – Downlink – Auto (Gated) is newly supported

Modulation Accuracy:

- Slot number for measured slot is displayed

Defect Fixes / Changes:

- 003: Mod Accuracy: Minimal value of Chip offset reduced
- 064: Power Control: Burst Search Threshold line is displayed, and burst detection algorithm is improved.
- 065: CDP: Inactive Channel power stability improved with WCDMA multi-carrier
- 081: Mod Accuracy: Peak CDE calculation improved
- 208: Mod Accuracy: Fixed Symbol based EVM calculation when PCCPCH is bursted
- 209: Mod Accuracy: Now allow Symbol Based selection in Results Metrics View
- 011: SEM: Fixed reference level from doubling when attenuation is set to manual
- 151: Code Domain and ModAccuracy: Enhanced external trigger so that first slot would not be missed
- 064: Power Control: Enhanced PRACH preamble burst detection
- 204: ACLR: Swept mode detector is now defaulted to Average
- 074: QPSK EVM: Max Meas interval increased to support PRACH preamble EVM test
- 111: Mod Accuracy: Increased max allowable values in EVM / Peak EVM limits
- 181: Mod Accuracy: Time offset can not be displayed in seconds
- 194: Code Domain: Enhanced PICH detection

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- 019: Mod Accuracy: Fixed Active Channel Power averaging for Base Band I/Q input (E4406A only)
- 110: PCON: RRC On/Off filter switching not correctly reported
- 114: Mod Accuracy: Fixed zoomed code domain power list from being clipped
- 174: Mod Accuracy: Expand key fixed in CDP view
- 027: ACP: Measurement algorithm improved when Sweep Type = Fast
- 063: Code Domain: Fixed tDPCH setting when Auto detection fails
- 075: Code Domain: Fixed :SENS:CDP:SBO:BTS? query
- 096: Code Domain: Fixed Uplink DPDCH Beta measured result for Q-axis
- 117: Mod Accuracy: Default value for "SCH Include" is changed to On (3GPP compliant)
- 180: Delta marker on Code Domain window now shows dB instead of dBm

New 1xEV-DV add-on to cdma2000 personality (Requires Option #214)

New Features:

Code Domain Power:

- Auto Active Channel detection support for F-PDCH(16QAM/8PSK/QPSK)
- Predefined Active Channel support (Active Channel detection mode: combination [Auto & Manual] support)
- Modulation Type Selection – Downlink – 16 QAM / 8PSK now supported
- Demod Bits – Downlink – 16 QAM / 8PSK (16QAM: Binary / Hexadecimal) supported

Modulation Accuracy:

- Auto Active ID detection support for F-PDCH (16 QAM / 8PSK / QPSK)
- Predefined Active Channel support (Active channel detection mode: combination [Auto & Manual] support)

cdma2000 (Option #B78) changes to this release:

New Features:

Code Domain Power:

- Active Channel detection support – Downlink – Auto (Gated) is now supported

Bug Fixes / Changes:

- 003: Mod Accuracy: Minimal value of Chip offset reduced
- 011: SEM: Fixed reference level from doubling when attenuation is set to manual
- 102: Code Domain: Fixed demod bits for forward link changing due to trigger delay setting
- 151: Code Domain and ModAccuracy: Enhanced external trigger so that first slot would not be missed
- 109: Mod Accuracy: Power Timing and Phase View can now be selected in via SCPI
- 111: Mod Accuracy: Increased max allowable values in EVM / Peak EVM limits
- 180: Delta marker on Code Domain window now shows dB instead of dBm

GSM / EDGE (Options #BAH, 202 , 252) changes to this release:

New Features:

GMSK Phase and Frequency:

- Trigger to T0 measurement support

Bug Fixes / Changes

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- 184: EDGE / GSM ORFS Modulation absolute limit for MS is supported
- 069: EDGE EVM: Fixed freeze when Carrier Continuous, Burst Sync = Training Sequence
- 125: EDGE EVM: Measurement for invalid signal crash fixed
- 068: GSM PFER: Fixed regression from A.06.03 for demodulation bursts with large phase shifts
- 146: EDGE ORFS: Fixed problem of incorrect data upon first measurement acquisition when trigger is set to frame
- 148: GSM PFER: Fix regression of burst search threshold being inoperative
- 187: PFER: Fixed :FETC:PFER? giving no response when no valid signal is fed
- 182: GSM PVT: Removed Read/Fetch/Meas:PVT10? Query command and replaced functionality in PFER measurement

1xEV-DO changes:

Bug Fixes / Changes

- 052: CDP: Fixed ESec indicator from staying lit
- 180: Delta marker on Code Domain window now shows dB instead of dBm

cdmaOne changes:

Bug Fixes / Changes

- 183: Code Domain Power: Average Traffic changed to exclude Walsh Channel 32

NADC changes:

Bug Fixes / Changes

- 072: ACP: Fixed speed slow down that was in A.06.03 firmware traces

Core firmware changes:

Bug Fixes / Changes

- 073: CALC:DATA:COMP parameter DME sped up
- 100: Sped back up Basic Spectrum measurement speed
- 090: Center Frequency on display not correctly updated when using Base Band I/Q inputs
- 132: Spectrum: now allow markers to remotely go on Base Band I/Q traces

A.06.03_Rel_2 (7 January 2005)

Core FW changes for this release

New Features:

Added support for the 64 MB Flash memory assembly E4406AU-ANE

A.06.03 (23 January 2003)

Note: This list is provided for informational purposes only and may not be complete.

1xEV-DO changes for this release

New Features:

Code Domain Power:

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- Added MS (Mobile Reverse Link) Code Domain Power Measurement
- Automatic Preamble detection support
- Data Channel Active detection mode
- Half slot Meas Interval / Offset
- Added I/Q Combined Bar Menu to allow for Separate CDP view
- Support for Multi-carrier measurements through a 1.2 MHz band pass filter
- Ability to flexibly set I/Q long code mask.

Mod Accuracy

- Added MS (Mobile Reverse link) Support
- Automatic Preamble detection support
- Channel Type Preamble Support
- Data Channel Active detection mode
- Updated Results metrics view
- Calculation and limits for the following parameters: Max MAC Interactive Power, Max Data Active Power, Min Data Active Power
- Support for Multi-carrier measurements through a 1.2 MHz band pass filter
- Ability to flexibly set I/Q long code mask.
- Spurious emissions & ACP Change in table to reflect "Offset to Edge" labeling

Bug Fixes / Changes:

- 280: Fixed the Total Active Channel power from the read:cdp? command from sometimes being positive.
- 396: Mod Accuracy: Fixed problem where PASS/FAIL flag did not indicate FAIL if Freq Err results are past fail limit.
- 184: CDP: CALCulate:CDPower:WCODE:ORDER now uses enum value Hadamard in addition to incorrect value of HADMrd
- 195: Err number of 'Valid 1xEV burst not found' changed to 605 instead of 105.
- 428: CDP/Rho: Fixed input overload when input is a bursted signal. Input attenuation now set based on peak mode instead of average mode
- 258: SEM & ACP: Meas BW set to 100 when start = stop frequency

W-CDMA changes for this release:

----- New Features:

Code Domain Power:

- Support for Compressed Mode
- Ability to set Time Offset for DPCH over range 0 to 149 (tDPCH:1 = 256 chips)
- Support for Sync type PRACH Message for MS
- Support for DPCH slot formats SF0 through SF5 for MS (Previously only support SF0 and SF2)
- PRACH Preamble Signature Detection and ability to manually set PRACH Signature between 0 and 15
- DTX – Tri-state data representation for I/Q demod bits
- 3 Frame Full Mode support
- STTD Antenna-2 CPICH support – Provides synchronization scheme with STTD Antenna 2 CPICH.

Mod Accuracy

- Sync type PRACH now supported
- Support for DPCH Slot Formats SF0 through SF5 for MS (Previously supported SF0 and SF2)
- PRACH Preamble Signature Detection

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- Ability to set the following MS limits: Peak Code Domain error, Rho Limit, RMS EVM, and Freq Error
- Code Domain Power and Active Channel Table View
- New Results Metrics View
- STTD one key measurement solution
- STTD Antenna-2 CPICH support – Provides synchronization scheme with STTD Antenna 2 CPICH.
- Timing Offset repeatability improved

QPSK EVM:

- HPSK EVM (12.2 kbps RMC UL) constellation support
- Max value of Meas interval is expanded up to 2560 chips (1 slot) [previously was 512 chips]
- Origin offset handling – allows user to exclude IQ offset or not.

Spectrum Emission Mask

- Added RRC filter and Alpha selection

New Power versus Time Measurement

New Power Control Measurement

- Slot Power Measurement
- PRACH power measurement

Bug Fixes / Changes:

- 459: RHO: Freq Error now calculated over 1 slot instead of 5 slots
- 12: CDP: Delta Marker for Symbol Power trace now gives correct units of dB
- 14: Fixed truncation of last three characters of Demod bits: Channel info string.
- 351: RHO: Fixed averaging problem for active channel table when in Exp mode.
- 375: CDP: Fixed problem of PICH slot boundary not always being detected correctly.
- 409: RHO: READ:RHO 8? values are now averaged instead of returning last iteration
- 141: RHO: In symbol based sync menu, changing Symb Rate or Code Number now causes a restart of the measurement.
- 156, 165: SEM: Values 1,2 and 4 in the results from READ:SEM? command now report the correct -999 value.
- 348, 158: CDP: Unit of channel power in Quad view now changes depending on meas type parameter. Now shows dBc for relative measurement .
- 343: RHO: Averaging method for CPICH improved
- 158: CDP: For the SCPI command, :CONF:CDP[1]?, value 6 description changed from “Average Power” to “Channel Power”
- 305: RHO: Changed CPICH Power accuracy default fail limit from 2.9db to 100.0dB
- 192: ACP: Adjusted attenuation setting for instruments with option H54 (reduced LO emissions option)
- 26: Added missing command /enum :CALC:RHO:ASET:THR
- 307: CDP Uplink. Fixed problem of channel power at Q-axis in quad view being incorrect.

GSM/EDGE enhancements:

----- New Features:

GSM Phase and Freq:

- Speed improvement through new measurement engine
- Ability to turn trace data on or off
- Ability to turn I/Q origin offset on or off

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- Support for Base Band I/Q inputs

GSM ORFS:

- Speed Improvement by capturing a slot length of data instead of a frame length of data when “Timeslot” is ON and using External trigger
- Speed Improvement by using hardware peak detection for ORFS Switching

GSM and EDGE PVT:

- PVT trigger to T0 time. Provides the accurate timing information from trigger to T0 position for GSM/EDGE. (:READ:PVTime 10?)
- Support for Base band I/Q inputs
- Support for multi-slot consecutive bursts with no ramping between bursts. At least one inactive slot (RF power down) is still required per frame.

Transmit Power, Spectrum and Waveform:

- Support for Base band I/Q inputs

GSM and EDGE TX Spur

- GSM450, 480, 850, 700 bands now supported

Bug Fixes / Changes:

- 150: GSM and EDGE ORFS: Increased Input Attenuator Margin
- 307: Changed default RF Burst Trigger Level from -20.0 dB to -25.0 dB
- 360: EDGE EVM: Updated for RF Amplitude = Burst Sync mode the RMS Mag and RMS Phase calculation.
- 362: EDGE EVM RF burst peak level setting now changes correctly when a new value is entered.
- 48: ORFS: SCPI command CALC:ORFS:MARK[n]:TRAC now accepts correct SPEM enum value in addition to incorrect SSM enum for Swept spectrum trace.
- 425: EDGE EVM: Updated calculation of Max Mag Error, Max Phase Error, and Max Frequency Error.

CDMA2000 changes for this release:

----- New Features:

Code Domain Power and Mod Accuracy:

- Support for Multi-carrier measurements through a 1.2 MHz band pass filter

ACPR and SEM:

- Offset to Edge support. This specification defines the offset frequency (Δf) as the distance from (carrier) center frequency to closer measurement edge frequency

Bug Fixes / Changes:

- 348, 158: CDP: Unit of channel power in Quad view now changes depending on meas type parameter. Now shows dBc for relative measurement
- 184: CDP: CALCulate:CDPower:WCODE:ORDER now uses enum value Hadamard in addition to incorrect value of HADMrd
- 26: Added missing command /enum :CALC:RHO:ASET:THR
- 207: Fixed problem of measurement not working after changing long code mask.
- 307: CDP Uplink. Fixed problem of channel power at Q-axis in quad view being incorrect.

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cdmaOne changes for this release:

New Features:

Spur Close:

- Updated measurement to conform to the latest standard information (3GPP2 C.S0010 (BTS) and C.S0011 (MS))
- Added TX Spur 4 MHz Limit Category setting to Spur Close
- Added new Radio Standard Band Class settings
- Updated Channel Tuning Plan

ACPR

- Added support for IS-97D and IS-98D with "Offset to Edge" labeling
- Added new Radio Standard Band Class settings
- Updated Channel Tuning Plan

Bug Fixes / Changes:

- 144: Fixed Y scale/division on screen readout for Timing if <1us
- 68: Fixed Spur Close Mask on center segment for channels 685 through 742

Core firmware changes:

New Features

- CALC:DATA[n]:COMP? supports new parameter: lman (log of the mean of the antilog values)

Bug Fixes / Enhancements

- 339: Waveform: 24-bit data packing (Medium data packing) disabled while in BBIQ input mode
- 325: Display Off setting now persists when switching measurements.
- 326: Fixed problem of noise floor being too high if you change input port to "I only" or "Q only" or "I/Q" before switching into Waveform measurement.
- 24: Added missing enum values for CALC:EVMQ:MARK1:TRAC. The two new enum values are MERR and PERR.

A.05.37 Rel 002 (8 July 02)

EDGE/GSM changes for this release:

- Enhanced Pk EVM and 95% EVM for severely impaired EDGE signal

A.05.37 (4 Mar 02)

Core Firmware changes for this release:

- 331: Support for new revision of RF board (now supports larger calibration data on two flash EEPROMS)
- 2502: Enhanced LO unlock detection on power up by increasing delay to 400ms from 20ms
- 139: Enhanced wide XTAL prefilter alignments

cdmaOne changes for this release:

- 200: Enhanced RHO algorithm

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W-CDMA changes for this release:

- 729: Enhanced correlation for SCH sync mode

A.05.35 REL002 (20Dec01)

1xEV-DO Measurement Personality Added (Option 204):

Measurements available in the 1xEV-DO mode:

- Channel Power
- Intermod
- Power Vs. Time
- Spurious Emissions & ACP
- Occupied BW
- Code Domain
- Mod Accuracy (Composite Rho)
- QPSK EVM
- Power Stat CCDF
- Spectrum
- Waveform

GSM/EDGE enhancements:

- Added GSM ORFS Full Frame Modulation (Fast)
- Added EDGE ORFS Full Frame Modulation (Fast)

A.05.35 (1Nov01)

W-CDMA changes:

- 277: Frequency error is now computed for 1-slot rather than for the current multi-slot
- 721: Read CDP now returns the expected 31 values instead of 33 values. (Values 30 and 33 were extra)

GSM/EDGE changes:

- 193: Enhanced frame trigger adjust
- 194: Enhanced GSM and EDGE Tx Band Spur

A.05.32 (5Oct01)

Core firmware changes:

- Fixed SCPI command used for performance verification of Option B7C (Base band I/Q inputs).

A.05.31 (20Sep01)

Core firmware changes:

- Fixed printer compatibility problem with certain printers. Fixes problem of printer not completely printing entire screen plot.

A.05.30 (6Sep01)

Core firmware changes:

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- Change HCOPy default destination from "= Print To key" to "Printer" This means that the "new" (since Version 4.21) print screen procedures will be the default. The new print screen procedures support printing (to file) six different files (the original procedure supported only one file). For backward compatibility the HCOPy default destination can be changed to "= Print To key". This can be done from the Front Panel (Print Setup | Print To File | HCOPy Dest) and by Scpi command (HCOPy:DESTination)
- 2468: [calc:data2:compress block] now supports non-complex traces
- 2425 An instrument preset now sets the radio band and associated channel tuning back to it's default setting for preset.
- 3.159 color change for select window is now green.
- 2376 Fix x Ref to display 0.0 when it is less than display Resolution.
- 2387 Partial samples are no longer used when in free run trig.
- 3.112 The effect is FETCh is blocked until results are published. Force Pause/Resume softkey label to Pause on INITiate[:IMMEDIATE] command (when Pause key is labeled Pause VSA is NOT paused). Modify FETCh macro to wait for results published if INITiate:CONTinuous is ON.
- 2385 fixed problem loss of HPIB connection
- 2407 Maximum RBW for Gaussian Filter in Waveform set to 8MHz (used to be 7.5MHz)
- 2412: Unlock results vector while waiting for trigger. This allows clock updates to occur while waiting for trigger.
- 2406: Changed calculation of correction for more useful bins in low spans.
- 2409: Band Power marker return results fixed
- 2380: Add restoring Subnet Mask to 255.255.0.0 when restoring system defaults.
- 2380 Added Subnet Mask Key
- Changing the ext attenuation in the CCDF measurement now changes the Average Power reading.
- 3.95 Prevent running one cycle on all measurements CONFigure command or *RST.
- 2346 add INIT:<meas> commands
- 2345: Enhanced CALC:DATA:COMP? to accept parameters in units of time
- 2190: Prevent running one averaging cycle on all measurements.
- Fixed the coupling between external attenuation, input attenuation, and max total power. The max power returned by AcqMop includes external attenuation therefore the ext Atten should be subtracted from max power when estimate input attenuation.
- 2348 Added SCPI command
[:SENSe]:CHANnel:RFCHannel[:NUMBer] <integer> to do channel tuning for all personalities
- Fix the Range softkey active key when I/Q inputs are chosen.
- 2332: Change install message to ...
"New option keys become active after reboot"
- 2327: Correct Choose Option and Host ID processing
- 1509: Disable Front Panel Pass/Fail indicator when in Spectrum measurement.
- 2289: Fixes for programming PLL and unlock checking
- 2326, 2322, 2323: major overhaul of the polar display ghost Trace Display in time
- 2302: Change Video delay resolution to 66ns to match spec.
- 2311 Add x and y axis polar display offset and scale adjustments
- 2300: Corrected deactivated soft key label color when printing inverted screen image to file.
- -Change Call Summary mask to bit 10 (was bit 11).
- -Add Print system busy mask (bit 11).
- -Change definition of Device Summary mask to Mass Memory busy mask (bit 12).
- -Changes made to move printer and Mass Memory busy bits to STATus:OPER register.
- -Remove Scpi node STATus:OPERation:DEvice detail register.
- -Remove STATus:OPERation:DEvice detail register from PRESet logic.
- -Set STATus:OPERation:ENABLE to 0x0001 on power up.
- Added Abort Print softkey to Print Setup menu, page 2. SCPI is HCOPy:ABOrt.
- Define two new error numbers:
ERROR 48, "Error writing to floppy (A)";

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- ERROR 49, "Error writing to flash (C)";
- Change STATus:OPERation:BIT12 command to STATus:OPERation:DEvice.
Change STATus:QUESTionable:BIT12 command to STATus:QUESTionable:DEvice.
- Scpi commands added as shown:
Current: :CALibration:IMAGeFilter
Added: :CALibration:FILTer:IMAGe
Current: :CALibration:PFILter:LCNarrow
Added: :CALibration:PFILter:LC:NARRow
Current: :CALibration:PFILter:LCWide
Added: :CALibration:PFILter:LC:WIDE
Current: :CALibration:PFILter:XTALNarrow
Added: :CALibration:PFILter:XTAL:NARRow
Current: :CALibration:PFILter:XTALWide
Added: :CALibration:PFILter:XTAL:WIDE
Current: :CALibration:REF50:LAST:ABSLevel
Added: :CALibration:REF50:LAST:ALEVel
Current: :CALibration:TRIGger:INTerp
Added: :CALibration:TRIGger:INTerpolator
Current: [:SENSe]:SPECTrum:SWEep:TIME[:VALUE]
Added: [:SENSe]:SPECTrum:SWEep:TIME
- Added implementation for special a Calibration option "170" which applies measurement uncertainty during Cal. With this change, the VSA firmware will now report the "170" option in the Show System screen if it is licensed and will return "170" as part of the response to the *OPT? query.
- 2231: Extend bandwidth support in WAVE measurement to 10 MHz Change the maximum resolution bandwidth to 10 MHz
- Added base band I/Q support
- Added 89600 Remote Software Support
- 2136: Set and clear Paused bit in STATus:OPERation register(s).
- Add SYSTem:KLOCK command (locks out keypad).
- 2227: Add SYSTem:MESSAge <message text string> and SYSTem:MESSAge:OFF Scpi commands.
- 2096: Trigger level repairs: the computation was in error by 3dB; also, reduce Hysteresis from 3dB to 0.5dB for more improvement.
- Cancel any active function on entry (or reentry) to System menu.
- Cancel any active function on entry (or reentry) to Reference menu.
- Add Internal frequency message (10.0000MHz) for Freq Ref softkey when Int ref is selected.

GSM/EDGE changes for this release:

-
- Burst Search Threshold for Multi-slot PVT improved
 - 151: Improved GSM ORFS accuracy
 - 174: Improve the resolution on the TRIGger:SEquence:IF:LEVel Def and Min numbers
 - 128: Updated and made better the fix for GSM PFER peak phase error overflowing display field
 - 136: Fix unit presentation for rms and peak degrees for Phase and Freq. Grayed out the "Advanced" key when in Modulation sweep mode for ORFS. This mode does not provide the flexibility to change RBWs or Direct Time Break Frequency.
 - 3.126 Set RF Burst Trigger Level to -25 dB for EDGE. This fixes "Not Enough data to fit into GSM mask" error.
 - 3.127 When frequency hopping is on, turn on the prefilter and set its BW to 3.1 MHz to avoid hopping signal leaking into the ADC auto-ranging circuit for 12 bit digital IF board.

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- 3.137 Symbol clock recovery is now being done over a wider span of burst data in the RF Burst synchronization mode. This solves the "Valid Data - Zero valued TSC" case for the Phase and Frequency Error measurement in GSM. A 1 dB headroom increase was also added to the ADC "pseudo-manual" ranging algorithm.
- 3.68 Modification in the method by which symbol timing estimation is performed. Allows zero data TSC when syncing to RF Amplitude.
- 3.129 Changes PASS/FAIL flag to only be linked to Burst of Interest. Use RF Ampl sync for bursts other than burst-of-interest in timeslot mode.
- 3.138 Changed displaying messages for ADC overloads
- 3.142 – Changed soft key labels, modifying GSM xxxx to GMSK xxxx in GSM/EDGE measurements menu.
- 3.136 Reformatting of displays to unobscure fail flags
- 3.144 Speed Up: Reformated code execution to bypass any result updates upon inability to successfully demodulate.
- 3.126: Corrected SCPI command CALCulate:EEVM:MARKer ENUMs.
- 3.125: Shorten long form modulation ENUMs (max length is 12 characters). In general, "modulation" abbreviated "mod".
- 3.115 Remove the dependency of Ref Level on "RF Input Range Auto/Man" and implement "Scale Coupling On/Off" to do the same functionality. Scale Coupling goes to OFF when the Ref Level is changed.
- 3.120: Setting ADC range mode to AUTO in FFT method of Modulation Sweep mode seems to raise the noise level at >300 kHz offsets. Changed ADC range mode to AUTOPEAK.
- 3.99 - errPt message modified to "1st Error Pt"
- 3.80: Enable automatic speed improvement for EDGE ORFS due to Switching.
- 3.100: corrected consistencies in messages for errors related to timeslot mode and presence of valid GSM bursts or lack thereof.
- 3.106: message "GSM burst out of limits" removed due to its lack of adherence to UI stds.
- 3.116: Correct Average Type enum for "maximum and minimum". Enum before correction was MXMInimum. Correct enum is MXMinimum. MXMInimum will be retained as a "hidden" enum for backward compatibility Average Type query will always return MXM when type is maximum and minimum regardless of which enum was used to set type.
- 2.132: Now keep track of bit highlighting across lines on display
- 3.109 Added 100 us delay to external triggers to accommodate external pre-trig delay when doing ORFS Switching.
- 3.105 Set Trig Holdoff to 4.4 ms GSM PvT & EDGE PvT
- 3.80 ORFS due to switching transients speed improvement now the default, automatically Grays out the DirectTimeBreakFreq key and displays "0 Hz".
- Fixed Frame Trigger always triggers on the "Burst-of-Interest"
- 3.86: Correction for external attn "Input Overload" defect in Phase and Frequency
- In ORFS due to Switching, when measuring reference power, need to acquire the whole frame of data if not using RF Ampl triggering, such that timeslot offset can work properly.
- 3.94: Fixed crash when trig delay is set to a large number.
- 3.45: Added new key and SCPI for Extreme limits
- Added capability to select extreme condition limits for EVM measurement. 3.60: Fixed "Input Overload" problem due to incorrect usage of the "RF roll off" of signal power
- 3.69: Incorporated change from PSA-variant to change TSC from auto to manual when the TSC number is changed or entered
- Added support for GSM700 channel tuning
- Added subopcode 7 to PVT measurement to return the power of all 8 timeslot
meas:pvt7? meas:epvt7?
read:pvt7? read:epvt7?
fetch:pvt7? fetch:epvt7?
These SCPI commands return 8 float numbers.
- 2.141: Spectrum due to Switching limit changed to -52 dBc @ 400 kHz, -62 dBc @ 600 kHz.

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- Added EDGE Tx Band Spur measurement
- Proxima2.111: Changed the preset channel frequency to be 935.2MHz (ARFCN = 1) to match the default of ESG
- Speed enhancement to Phase & Frequency and ORFS.

W-CDMA changes:

- 715: Improved ACPR algorithm
- 95: Improved routine to give better EVM results when I and Q are at different amplitudes.
- 686: W-CDMA, cdma2k: CALC:RHO:IQOF:INCL has been updated
CALCulate:RHO:IQOFset:INCLude ON<1>|OFF<0>
CALCulate:RHO:IQOFset:INCLude?
This command's query responses are "ON" or "OFF" now,
but it should be "1" or "0".
- 693: Span/X Scale menu is no longer automatically displayed when [Next Window] key pushed.
- 685 WCDMA UL RHO: Number of IQ points now equals number of expected IQ points for 1 slot.
- 694: Demod Bits View is now grayed out when symbol based sync is selected. Symbol based sync can not be selected if you are in Demod Bits.
- 678/679 WCDMA/CDMA2K gained a new option that calculates EVM with IQ offset. New softkey, which toggles IQ offset mode, has been implemented under "Advanced" key in Modulation Accuracy. SCPI command for this key is as below.
CALC:RHO:IQOFset:INCLude ON|OFF|1|0
CALC:RHO:IQOFset:INCLude?
Initail : ON
- 684 Fixed code index of peak CDE problem for 3GPP Up link
- 677: SCPIs related to Active ID Threshold have 'SENS' on its head.
Because calculation for Active ID Threshold is a post process, SCPI commands should have "CALC" on its head. New SCPI commands will be:
CALC:CDP:ASET:THReshold:AUTO ON|OFF
CALC:CDP:ASET:THReshold:AUTO?
CALC:CDP:ASET:THReshold <float>
CALC:CDP:ASET:THReshold?
- 661: Remote SCPI command added. SCPI :TRIGger[:SEQuence]:FRAMe:SYNCmode
EXTFront|EXTrear|OFF
- 640 Removed all Timing, Offset, Phase results without the title string, when the current results is not available.
- 635 Power Timing view shows "Turn On the Multi Channel Estimator. (under the Advannced key)' message on the text window when the estimator is OFF. And the Power Timing & Phase soft key is always active.
- 634: Composite EVM no longer includes SCH.
- 631: Composite Rho measurement now restarts when SCH include is changed
- 633: Code Domain Power, Symbol Boundary=Pre Defined now works
- 589: WCDMA ACPR Default values of Limits
The default ACPR limits are now:
-44.2, -49.2, -49.2, -49.2, -49.2 for BTS,
-32.2, -42.2, -42.2, -42.2, -42.2 for MS.
- B.36: Peak CDE now calc'd as SF=256 for BTS and SF=4 for MS.
The test condition for Peak CDE measurement Spreading Factor(SF) defined in the 3GPP standard TS.25.141 and TS.34.121 Conformance Test requirements has been changed.
The old 3GPP (e.g. ver.3.1.0):
"The peak CDE shall not exceed -33dB (at the maximum SF)"
The new 3GPP (e.g. ver.3.4.0)
"The peak CDE shall not exceed at SF 256." (TS.25.141: BTS)
"The peak CDE shall not exceed at SF 4." (TS.25.121: MS)
- 566: ACLR, Sweep detector type default now set to PEAK.

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- Symbol based universal synchronization implemented. Run for cdma2k uplink and 3GPP down link for Antenna-2 signal.
- CodeDomain gets 40% faster (Tested 3GPP Down Link)
- New 1 slot mode is 2.5 times faster than regular 2 frames mode.
- Modulation Accuracy gets 40% faster with no active ID mode (Tested 3GPP Down Link)
- Spectrum Emission Mask measurement has added functionality to comply recent 3GPP change.

cdmaOne changes for this release:

- SENS:ACPr:DRAN changed to SENS:ACPr:DYNamic:RANGe to support the required two sub-codes
- Enhanced low segment for cdma Spur Close has been made keyless. The SCPI command remains as "[[:SENSe]:CSPur:EXTLs On|Off]" to enable and disable this feature

CDMA2000 changes for this release:

- 692: Grayed out Power Timing & Phase view when radio type is reverse link
- 676: SCPI for PN offset is required in RHO and CDP.
SCPI for PN offset is required. The commands should be:
CALC:CDP:PNOFFset <int>
CALC:CDP:PNOFFset?
CALC:RHO:PNOFFset <int>
CALC:RHO:PNOFFset?
- 650: cdma2K SEM Offset/Limit defaults changed to comply with the latest cdma2000 standards.
- 608: Default capture length was set to 5 PCGs for Code Domain Power for faster measurement without compromise to accuracy
- 640 Removed all Timing, Offset, Phase results without the title string, when the current results is not available.
- 635 Power Timing view shows 'Turn On the Multi Channel Estimator. (under the Advanved key)' message on the text window when the estimator is OFF. And the Power Timing & Phase soft key is always active.
- B.30: Fixed random high phase error readings for cdma2000 BTS on channel C6(1)
- B.31: Fixed cdma2K CDP unexpected shift in value of the Timing Offset number compared with the time offset result (from frame trigger) of released firmware A.4.21 and beta firmware A.05.05.
- B.35: Sync Chan W64(32) now detected as active if the base code = 64 [cdma2000]
- W64(32). The sync channel, could not be detected as active under the condition of Base Code Length=64 in previous versions. Instead, it was detected as active when the Base Code Length is set to 128, but as 9.6ksps. (it should be 19.2ksps).
- B.34/32: Frequency offset no longer inverted for cdma2000 reverse and downlink
- Symbol based universal synchronization implemented. Run for cdma2k uplink and 3GPP down link for Antenna-2 signal.
- cdma2k Code Domain Timing/Phase view added.

NADC/PDC:

- 624: Can now set up to 100 dB external attenuation for NADC/PDC

A.04.21

- GSM PFER & PVT: Initialize r_level. Adjust frame

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- trigger phase for burstMode only for successful sync
- GSM: Improved Dynamic Range at 400 kHz offset by changing default value of DirectTimeBreakFreq back to 600 kHz. Changed the lower limit of DirectTimeBreakFreq from 0.0 to 1.0 to avoid algorithm error in measuring reference power of spectrum due to switching.
- Changed optimum input power level at 400 kHz offset when using Direct Time method.
- Set Auto-Trigger Timeout bit (10) in STATus:QUEStionable:INTEgrity register when VSA is auto triggered. Replace Auto trigger error message (Error 44, "No trigger before timeout; auto-triggered").
- Change default settings of all lower level STATUS:QUEStionable:***:ENABle registers from zero to 32767.
- Long form of FFTS should be FFTSegment. Add an alias to FFTSeg ... FFTSEGMENT
- Remove DTREE "SENS:CORR:MS" This will add both SENS:CORR:BS:LOSS and SENS:CORR:MS:LOSS commands to Basic. Only the "BS" version will do anything.
- GSM: Remove [:SENSe]:ORFSpectrum:AVERAge:TCONTRol and [:SENSe]:EORFSpectr:AVERAge:TCONTRol Only Repeat mode in ORFS is supported and EXP mode is no longer given as an option
- GSM: Set Y reference according to signal power such that the spectrum always on the screen.
- GSM: Changed yRef = peak_power; to yRef = ceil(peak_power/10.0 + 0.5) * 10.0; such that the Y reference doesn't wobble.
- Added SCPI command: SYSTem:CONFIgure[:SYSTem]? query to retrieve system configuration.
- SCPI change:
Replaced
[:SENSe]:ORFSpectrum:AVERAge:TYPE
by
[:SENSe]:ORFSpectrum:AVERAge:MODulation:TYPE
[:SENSe]:ORFSpectrum:AVERAge:SWITching:TYPE
- Display "TSC Auto" instead of "Auto" when the training sequence is set to auto.
- Added code to remove X and Y reference menu in ORFS(GSM & EDGE) when measuring multiple offsets(numerical display).
- Added SCPI commands to turn on/off PVT mask:
:DISPlay:PVTTime:LIMit:MASK 0|1|ON|OFF
:DISPlay:PVTTime:LIMit:MASK?
and alias
[:SENSe]:PVTTime:LIMit:MASK 0|1|ON|OFF
[:SENSe]:PVTTime:LIMit:MASK?
- Added TSC Auto / TSC N annotation to center of CH Freq banner. Set EVENT bit rather than CONDition bit for the following happenings:
 - 116 noPersonalityFile
 - 118 catalogIncomplete
 - 120 personalityNotLicensed
 - 122 personalityNotInstalled
 - 124 invalidPersonalityFile
 - 126 personalityLoadFailed
 - 128 initIgnored
 - 142 invalidTraceNumber

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144 traceDataNotReady
146 measDataNotAvail
152 commandNotImplemented
154 functionNotImplemented
158 insufficientDataBit
176 setupINVALID
178 printerOutOfPaper
180 noPrinter
184 printerOutOfPaper
186 printFailure

Add the following happenings and their corresponding anti-happenings:

242 autoTriggered
244 noStateFile
246 stateFile

- GSM: PVT mask always uses "Pwr Avg" averaging to find the transmit power of the signal along with the 0 dB reference for the mask. Also added code to support "Max & Min" averaging, which does maximum and minimum averaging, and displays two traces at once. Removed "Voltage Avg" key (pvtEdgeAverSCALAR) from EDGE PVT Avg Type menu. Added "Max & Min" key (pvtEdgeAverMAXNMIN) to Avg Type menu
- GSM: Changed adcRangeMode to AUTO to fix jumping noise floor in GSM Phase and Freq.
- Markers: Now Marker stays correctly located in frequency when the number of FFT points changes.
- Spectrum Emission Mask: displayed frequency increase to 4 decimal places.
- Expand Status Register System:
Define questIntUncalibrated register. The following bits are assigned:
 BIT oversweepBit = { POS 0; }
 BIT signalIdentOnBit = { POS 1; }
 BIT noLongCodePhaseBit = { POS 2; }
The questIntUncalibrated register is summarized in the questIntegrity register in POS 3; measUncalibratedBit.
- Fixed [:SENSE]:SYNC:ALIGNment command.
- Spectrum Emission Mask: Off/On state in limit stop coupling are changed to Couple/Man.
- Added SCPI command "[:SENSE]:ORFSpectrum:BFrequency" -- set the direct time break frequency remotely
- Basic Personality:
 - Make configure? return PST for the CCDF measurement
 - Problems with cdmaOne:Code Domain Pwr:Y-scaling fixed
 - SCPI commands which allow user to customize limit masks in ORFS and EORFS now work.

A.03.30

- Added LAN capability for instrument control.
- Fixed ORFS results due to switching. Previously used the modulation RBW list.
- Fixed the integer overflow problem in cdmaOne/CDP/Timing, yRef > 600ms.
- Correction for inbound/outbound SCPI longforms.
- Multiple connect/disconnect which only do INST:SEL caused hangs.

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- Correction for dB units changing to dBm
- Need to acquire at least one frame of data for MODULATION, such that we are able to sync to other time slots.
- Add extra Softkey under MeasSetup More to Enable/Disable the Spectrum Trace. Added istate to disallow the spectrum view when the Spectrum Trace is disabled. This functionality will increase speed.
- GSM Gots causes memory fault crash when using SICL server. The STACK_SIZE used when creating a SCPI parser thread for SICL, SOCKET, TELNET wasn't implemented although argument was passed.
- The 2dB error compared with Momentum. Turned off prefilter when do FFT method. Set input attenuation manually to get more dynamic range.

Update LAN/SEGUE package, includes ...

- Change HP-IB to GPIB on all softkeys
- Telnet Port still set to non-default after Restore Sys Defaults
- Telnet connection still allowed with port turned off
- Telnet and Socket based block data queries inconsistent with HPIB
- Cannot configure Socket Port
- Cannot turn SICL Server off.
- Several SICL Server configuration softkeys should be grayed-out
- All LAN configuration changes do not take affect until power cycle
- RPG causes system error when telnet or socket port keys active

Fixed the following defects ...

- Query UNTERMINATED error message on personality change.
- Cannot print to postscript printer
- Change HP-IB to GPIB on all softkeys
- SCPI command to adj. the 10 MHz time base is incorrect or broken
- Waveform: Peak-to-mean scalar value spikes in a very reproducible way
- IF (Video) Triggering is inaccurate
- GSM: ORFS memory fault while doing a read:orfs
- Display crashed in cdma/cdp/powerTiming&Phase/Timing
- Display marker not visible in cdma/cdp/Power when bars below window.
- SCPI *cls crash, display code runs on both HPIB and Event Disp threads
- Display cdma/cdp/Timing and Phase: yRefPos angle markers not working.
- Inconsistent measurement behavior between PVT and PFER can hang SCPI tests
- Waveform measurement: remove the pass/fail display indicator -- not used.
- ACP: Basic Mode: 3 remote commands not functioning properly
- Frame Trigger SCPI commands not functioning
- GSM PvT:Default SCPI value for upper mask needs to be corrected
- GSM: The default value of Burst Search Threshold should be lowered
- GSM Mean Tx Pwr: the threshold line disappears at Log-Pwr Avg
- GSM PvT:Burst width result of 0us on higher bandwidths.
- GSM ORFS: [] operator of DspVector generates ^clipped^ error msg
- GSM ORFS: use power of DUT instead of RF INPUT to search spec table
- Basher script causes Floating Point Exception crash

Added the following enhancements ...

- Change display to use Agilent logo instead of HP.
- Merge in latest iDEN bits (iDEN2)
- Add command, HCOpy:SDUMp:DATA? GIF | XWD
- Fix problem in GSM where a burst at higher RBWs or with noise would return a burst width of zero.

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A.03.26

- Fixed code to indexes to correct spec table when selecting DCS1800 and PCS1900 bands
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A.03.25

- Support added for the release of options BAF W-CDMA, B78 CDMA2000, and HN1 iDEN measurement personalities.
 - New GSM measurements: Transmit Spurs and Power vs. Time Limit Masks
 - New BASIC measurements: ACP and Channel Power
 - Time calibration enhancements
 - Flash Memory capacity added
- Command Compatibility Changes
- Change only in CDMA RHO and CDP measurements:
 - [:SENSe]:SYNC changed EXT1 to front panel, EXT2 to rear panel
 - Changed LENgth to corrected form LENGth in
 - [:SENSe]:SPECTrum:FFT:LENGth, [:SENSe]:SPECTrum:FFT:LENGth:AUTO, [:SENSe]:SPECTrum:FFT:WINDow:LENGth
 - cdmaOne RHO measurement trace names changed from MAGnitude to MERRor and from PHASe to PERRor:
 - :CALC:RHO:MARKer[1]|2|3|4:TRACe <trace_name>
 - Changed "EVM" to "EVMagnitude"
 - Changed "ACP" to "ACPr"
 - Changed short form of INITiate:REStart from INIT:RES to INIT:REST
 - *OPT? returns option strings, i.e., BAH, BAC instead of personality name.
 - Changed CALibration:ADCRam:OFFSet to CALibration:ADCRam:OFFset
 - Changed CALibration:ATTen to CALibration:ATTenuator
 - Changed CALibration:CORR to CALibration:CORRection
 - Changed CALibration:GAIN:CSYS to CALibration:GAIN:CSYSem
 - Changed CALibration:GAIN:NSYS to CALibration:GAIN:NSYSem
 - Changed XTALNarrow and XTALWide in the CALibration:PFILter to XTLNarrow and XTLWide
 - Changed CALibration:REF50:AMPL to CALibration:REF50:AMPLitude
 - Changed CALibration:REF50:ENTER to CALibration:REF50:ENTER
 - Changed CALibration:REF50:LAST:ABSLev to CALibration:REF50:LAST:ABSLevel.
 - Changed CALibration:TRIG:DELays to CALibration:TRIGger:DELays
 - Changed CALibration:TRIG:INTerp to CALibration:TRIGger:INTerp
- Basic Mode:
- Removed [:SENSe]:POW:RF:RAN and [:SENSe]:POW:RF:RANGe
- GSM Mask:
- Removed [:SENSe]:ORFS:AVER:TCON
- Added Programming Commands (does not include new measurements commands)
- [:SENSe]:CHP:SWE:TIME
 - [:SENSe]:CHP:SWE:TIME:AUTO
 - [:SENSe]:CHANnel:ARFCn
 - [:SENSe]:CHANnel:ARFCn:BOTTom/nquery
 - [:SENSe]:CHANnel:ARFCn:MIDDLE/nquery
 - [:SENSe]:CHANnel:ARFCn:TOP/nquery/
 - [:SENSe]:CHANnel:RFCHannel
 - [:SENSe]:CHANnel:RFCHannel:BOTTom/nquery/
 - [:SENSe]:CHANnel:RFCHannel:MIDDLE/nquery/

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- [:SENSe]:CHANnel:RFCHannel:TOP/nquery/
- [:SENSe]:CHANnel:ARFCn|RFCHannel <integer>
- [:SENSe]:CHANnel:ARFCn|RFCHannel?
- [:SENSe]:CHANnel:ARFCn|RFCHannel:BOTTom
- [:SENSe]:CHANnel:ARFCn|RFCHannel:MIDDLE
- [:SENSe]:CHANnel:ARFCn|RFCHannel:TOP
- [:SENSe]:CORRection:BS[:RF]:LOSS (Basic Personality)
- [:SENSe]:CHPower:POINTs:AUTO
- CDP:SPEC (Short form of [:SENSe]:CDPower:SPECTrum)
- RADio:CARRier:HOP OFF|ON|0|1

Resolved defects:

- inst:cat?, inst:cat:full?, acp:ffts? crash instrument
- Marker text does not track marker position in quad view
- Unable to print screen or change IP address when measuring large number of points.
- RPG knob still active on time and date entries
- GSM Tx Spur: Changed default average count from 5 to 30
- GSM: Added support for EGSM and RGSM bands.
- System Error messages when using the alpha editor. The Escape, Done, and Enter keys now return to the menu from which the alpha editor was invoked.
- Even second loss indicator stays green with or without trigger when using the Rho or CDP measurements.
- Error light stays on even when there is no error condition or error in queue.
- Pressing blank soft key causes system error.

A.02.11

- Support added for the release of option BAE NADC/PDC Measurement Personality.
- *TST? Self-Test Query added

Resolved defects:

- External reference indicator shows green with no external reference connected.
- Auto Align is not always aborted by ESCape key.
- Res BW soft key annotation incorrect when using manual FFT window length.
- View cannot be changed in CDMA Spur Close measurement when in EXAM/Single mode.
- Max Total Power coupling incorrect when using GSM Auto Attenuation mode.
- Noise floor bouncing in CDMA code domain measurements. Pre-carrier filter added.

A.01.42

This is the first customer release shipped which includes two measurement personalities, cdmaOne and GSM.