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PSA Spectrum Analyzer Firmware Revision History

Purpose:

The purpose of this document is to provide an overview of the important changes made with each PSA Series Spectrum Analyzer firmware and measurement personality revisions. It is not a complete listing of all resolved defects.

A.11.21 June 19, 2012

Fixes / Changes:
– SA Mode: Fixed intermittent spike issue that occurred when measuring noise-like signals with signal levels about -50 dBm where Avg/VBW Type is set to Log-Power (Video) and the Video bandwidth is wide open (typically >= 4 times RBW)
– Measuring Receiver (option 233): Fixed crash when using demodulation measurements with center frequency below 50 kHz. The measurement frequency setting is now limited to lower end of the specified measurement range, which is 100 kHz.
– Measuring Receiver (option 233): Fixed issue where Option 23B (CCITT filter for audio measurements) was not turned on as a standard feature.
– Measuring Receiver (option 233): Improved robustness of TRFL measurement when stepping down in power by increments other than 10 dB (for example 13 dB steps)
– Core FW: Status bar updated to reflect copyright years "2000-2012"

A.11.20 October 25, 2011

Fixes / Changes:
– Measuring Receiver (option 233): Fixed defect where the RF Power measurement upper frequency was sometimes limited to 3 GHz instead of the upper frequency of the analyzer
– Measuring Receiver (option 233): Added beta support for N1913A and N1914A power meters (Note: The N5531S Measuring Receiver system has not yet been specified for these power meters)
– Measuring Receiver (option 233): Added new diagnostic commands to allow the external Avionics Measuring Receiver software to control the option 107 Audio Input to make VOR/ILS baseband measurements
– Core FW: CPU header information is now shown in the Show Hardware screen for instruments for which the header information is programmed (instruments made December 2011 and later / with serial prefix US/MY/SG5148 and later, or for which the CPU has been replaced after Dec 2011)
– TD-SCDMA (option 212): Fixed demodulation engine defect for 64 QAM
– Wideband digitizer (option 122/140): Fixed issue concerning stale or corrupt data for deep I/Q captures when using trigger delay for captures of approximately 500ms in length.
– Core FW: Status bar now reflects copyright years "2000-2011"

A.11.18 Jan 26, 2011

Fixes / Changes:
– SA ACP and MCP: Enhanced noise correction algorithm (Noise Correction must be turned on).
– Noise Figure (option 219): Fixed issue where displayed PHot and Pcold values were incorrect whenever using external DUT loss.

A.11.16 Feb 11, 2010

Fixes / Changes:
- Noise Figure Personality: Fixed issue where error message was shown when `Ext LO Frequency' chosen is lower in frequency than the IF Frequency.
- External Source Control: Fixed issue when using the reverse sweep to measure the lower sideband through a mixer. The source was off in frequency by two trace points because of offsetting the start frequency by one trace point lower in frequency instead of one trace point higher in frequency.
- External Source Control: Fixed issue where the SCPI command "SOURce:EXTernal:FREQuency STARt" and "SOURce:EXTernal:FREQuency STOP" previously reported the start and stop frequencies of the analyzer instead of the actual start and stop frequencies of the source. The source's start and stop frequencies will be one trace point before and after the analyzer's.
- Core FW: Changed copyright date to 2000-2010
- WCDMA: Fixed intermittent sync failure with TM4 (without CPICH) with Sync Type = Antenna 2 TSTD.

A.11.13 Nov 11, 2009

Fixes / Changes:
- SA MCP: Fixed issue where sending fetch:mcp<n>? after read:mcp<n>? resulted in no data returned.
- SA MCP: Fixed issue where VBW key was disabled when switching between RBW to IBW method while in single sweep.
- SA MCP: Fixed issue where vertical offset lines where not drawn if measurement was set up in single sweep and then the span was changed right before initiating a measurement.
- SA MCP: Fixed issue where performing Optimize Reference Level gave "Illegal Parameter Error" at high power levels over +24 dBm
- Alignments and SA Mode: Fixed issue where instrument did not wait long enough when switching between AC and DC coupling.
- Code Compatibility: It is now possible to lock or unlock the six storage registers with the "KS(" and "KS)" commands. An associated soft key for "Lock Reg" is under the Preferences menu.
- Code Compatibility: Fixed issue where RBW coupling rules did not match those of 8566B. The Span/RBW ratios when the state of "Limit RBW/VBW" is on have been updated.
- Code Compatibility: Fixed support of "Save Reg 7" When the value is set to on, register 7 will now automatically be saved whenever the state of the analyzer changes. The previous instrument state can be recalled by pressing RCL 7, much like an undo command in a word processor.
- Basic: Fixed issue where TME cal software could not adjust option 140 IF flatness.
- EMC: Fixed issue where only .ANT correction files could previously be saved. The other types of corrections (cable, other, and user) can now be saved, too.

A.11.11 June 30, 2009

Fixes / Changes:
- Measuring Receiver (Option 233): Incorporated option 23A functionality (AM/FM/PM triggering) into option 233 as standard. (Therefore, there is no need for a license key for option 23A unless a customer's external automation software expects to see option 23A in the PSA's option string when performing a "*OPT?" query)
- Measuring Receiver (Option 233): Option 23B license (CCITT filter for audio measurements) is now installed for free as standard whenever a new instrument is shipped with option 233.
- Measuring Receiver (Option 233): Fixed issue to allow user to set amplitude threshold value for Frequency Counter measurement.
- Measuring Receiver (Option 233): Increase timeout for power meter zero and cal to accommodate N5532B sensor module

– Core FW: Fixed incompatibility of option 111 (USB) with certain option combinations for the E4446A
– CDMA2000 (Option B78): Improved robustness of reverse link demod for higher EVM signals.

A.11.07 January 22, 2009

Fixes / Changes:
– W-CDMA Mod Accuracy: Fixed EVM degradation introduced in A.11.xx firmware when input signal is only transmitted in every other slot (e.g. signal under TSTD mode)
– W-CDMA Mod Accuracy: Fixed speed degradation in A.11.xx firmware when Symbol Boundary Auto Detection is turned on. The soft key "HS-PDSCH 64QAM Enable On/Off" under Mode Setup Demod is defaulted to On and can be turned Off to speed up the measurement.   .
– Measuring Receiver FM Deviation: Fixed issue where Low Pass filter setting of None actually used a narrow setting instead of the widest setting
– Measuring Receiver: Fixed lock up in Frequency Counter and RF Power measurement when recalling state saved in TRFL measurement
– Core FW: It is now possible to recall a file, modify it, and re-save it as the same file name. Press [File] <more> <Autogenerate Filename> to turn Autogenerate file names to the off setting. Then load a state file, for instance, and modify the state. You can now re-save the state using the original name chosen or using the name of any other existing file.

Note: Option 111 (USB): For firmware version A.11.07 there are some option combinations that cause option 111 (device-side USB) to not work on PSA model E4446A. If option 111 does not function properly, the interim work-around is to revert to A.11.05 firmware until a new firmware release is available.

A.11.05 October 3, 2008

Fixes / Changes:
– Code Compatibility (option 266): Fixed switch point for phase noise dual loop to single switch point from 1.99 MHz to 2.0 MHz. This improves PSA's phase noise performance in compatibility mode at a 2.0 MHz span
– Code Compatibility (option 266): Fixed limit lines to allow setting of -175 dBm low limit.
– Basic, WLAN, Digital Modulation (mmWave instruments): Fixed issue where analyzer did not properly tune to signals in band 5 (26.8 to 31.15 GHz) when using the wideband digitizer through the preselected path.
– SA ACP: Fixed issue where analyzer did not properly set phase noise optimization when measuring offsets >= 10.5 MHz in the presence of narrow close-in offsets.
– WCDMA Mod Accuracy (BTS): Fixed modulation accuracy issue where a C8 code channel was inadvertently considered to be intermittently inactive.

A.11.04 July 7, 2008

Fixes / Changes:
– SA: Fixed issue where SCPI command "corr:cset4:x:space log" would return an error.
– SA: Fixed display regression in PSA firmware A.10.00 through A.11.01 where reference level offset setting would not adjust reference level, although offset was correctly applied to trace data.
– Source Control: Fixed amplitude dropout issue when using N5183A MXG source when doing a ramp sweep. Note: MXG firmware >= A.01.41 is also required.

A.11.01 May 16, 2008

Hardware Options for E4446A (44 GHz PSA) and E4448A (50 GHz PSA) now orderable:
– 122 (80 MHz digitizer) and 140 (40 MHz digitizer)

Core and Spectrum Analyzer Mode Fixes / Changes:
– Fixed display issue where pressing the View button while using Max Hold causes trace spikes
– Fixed issue where help text for RF burst trigger key was incorrect.
– Fixed issue where if you save a screen image, then load file that is not a screen image (for example a state file) then press the save again, the previous stale image was saved and not the new image.
– Fixed issue where if you set the number of trace points to 7 and use QPD detector, the analyzer would stop sweeping while in continuous sweep.
– Fixed issue involving sending the commands ":INST:SEL SA;:CONF SAN". The analyzer previously ignored the "CONF SAN" and returned to the last measurement that the SA mode is was in before the analyzer was switched to another mode.
– Fixed Issue where Harmonic Distortion measurement crashed when a center frequency of 10 Hz was chosen.
– Fixed issue where Spurious Emission measurement would crash if start frequency was set to be bigger than the stop frequency.

Basic (option B7J, 122, 140) Fixes / Changes:
– Support for Wideband digitizer for E4446A and E4448A (requires the purchase of option 122 or 140)

External Source Control (option 215) Fixes / Changes:
– Fixed connection diagram to correctly indicate MXG-A sources: N5181A, N5182A

Measuring Receiver (option 233) Fixes / Changes:
– Fixed ability to track a drifting signal within Tuned RF Level with Tracking measurement
– TRFL: Removed range 2 to 3 switch delay in Tuned RF Level Measurement by biasing the option 110 preamp on all of the time when in Measuring Receiver mode instead of only biasing preamp on when switching ranges (requires new option driver board E4440-60459 or requires that older option driver board be updated to the new CPLD code)
– TRFL: Fixed RF input ranging behavior
– FM/AM/PM Deviation: Fixed issue where The Peak Hold feature in Analog Demod measurements were not correct.
– AM/FM/PM Deviation: Fixed soft keys for users to turn off the Modulation Rate and Modulation Distortion & SINAD results separately.
– TRFL: SCPI commands to be able to store and recall TRFL cal factors as a group instead of having to store and recall the entire instrument state file.
– AM/FM/PM/Audio: Modify to display units in dBV, in addition to Volts.

Programming Code Compatibility (option 266) Fixes / Changes:
– Missing command MKTYPE / MKD added
– Missing command SUM (TRA/TRB) added

EMC Analyzer (option 239) Fixes / Changes:
NOTE: The N9039A RF Preselector also needs to have software version A.01.05 or later (A.02.02 or newer is recommended)
– Fixed ability to use N5182A as system alignment source
– Auto-couple will be performed when Measure at Marker is selected
– Will now get an updated reading of the N9039A system alignment status bit at regular intervals
– Fixed Factory Preset settings
– Fixed saved Measurement Results to include correct data and formatting

WCDMA (option BAF/210) Fixes / Changes:
- Fixes to comply with HSPA+ additions to 3GPP standard:
    - Mod Accuracy and CDP: Support for Test Model 6
    - Mod Accuracy and CDP: RCDE result on metrics window
    - CDP: QAM64 mod scheme selection
- CDP (uplink): Fixed phase rotation of E-DPDCH in compress / uncompress mode frame

1xEV-DO (Option 204) Fixes / Changes:
- PVT: Corrected trigger delay in Frame Timer

GSM w/ EDGE (Option 202) Fixes / Changes:
- EDGE EVM: Fixed issue where frame timer period was reset when switching measurements.

TD-SCDMA Modulation (option 212) Fixes / Changes:
- Fixes to comply with standard revision 3GPP TS 25.308:
    - 64QAM support for HSDPA and HSUPA
- Demod: Fixed issue regarding setting midamble shift
- Fixed ability for users to identify the phase shifts for each of the active channels.

TD-SCDMA (option 211) Fixes / Changes:
- ACP: When Noise Cancelation is set to ON, an extra sweep for the calibration will be done once before the regular sweep whenever the attenuation value is changed

A.10.08 December 20, 2007

Core and Spectrum Analyzer Mode Fixes / Changes:
- Improved preselector centering near the band breaks (For example, 6.56 GHz)
- Fixed crash related to Amplitude Corrections
- Fixed issue where relative level offset was not accounted for when switching between log and linear display
- Fixed issue where analyzer stopped sweeping when using quasi peak detection and a low number of sweep point
- Fixed issue where saved screen image could be file menu instead of measurement trace

WCDMA (option BAF/210) Fixes / Changes:
- Mod Accuracy (Uplink) : Fixed issue where Transient Period Include / Exclude selection did not affect PkCDE results.
- Power Control: Added half-slot phase discontinuity support with HS-DPCCH
  New SCPI commands:
  [:SENSe]:PCONtrol:MINTerval <real>
  [:SENSe]:PCONtrol:MINTerval?
  [:SENSe]:PCONtrol:SWEep:TIME:TRANsient INCLude|EXCLude
  [:SENSe]:PCONtrol:SWEep:TIME:TRANsient?

1xEV-DO (option 204) Fixes / Changes:
- Code Domain / Waveform Quality (Reverse Link): Fixed sync failure with lower power Pilot (high data rate) in ST0/1

Measuring Receiver (option 233) Fixes / Changes:
- TRFL: Fixed amplitude issue where result could be approximately 0.12 dB off after leaving measurement in free run and disconnecting and reconnecting signal.

- TRFL: Fixed issue where changing instrument center frequency slightly did not actually result in center frequency changing.
- FM/AM/PM Deviation: Fixed freeze-up issue
- TRFL and RF Power: Measurement now sets Power Meter back to dBm when entering measurement
- Fixed issue where address entered for Power Meter was reset when performing a factory preset
- AM/FM/PM Deviation: Added CCITT Filter (Note: Requires option 23B). Previously CCITT filter was only available for audio measurements performed with option 107.
- TRFL: Added 200 kHz IF Bandwidth filter
- AM/FM/PM/Audio: Sped up post demod filters
- TRFL: New SCPI command to read RECAL indicator when range switching mode set to manual [:CALCulate]:TRFLevel:RECalibrate?
- TRFL: New SCPI command to read UNCAL indicator when power meter requires calibration [CALCulate]:TRFLevel:UNCalibrate?

EMC Analyzer (option 239) Fixes / Changes:
NOTE: The N9039A RF Preselector also needs to have software version A.01.05 or later
- For signals at band edge when doing a measure at marker, the RBW is now locked to the current.
- The EMC personality now checks to ensure that the N9039A RF Preselector has a compatible software version
- Fixed system alignment failure when Amplitude Corrections are turned on
- Preselector now automatically switches to bypass when switching out of EMC personality
- Decreased dead time between sweeps

Option 211 TD-SCDMA (option 211) Fixes / Changes:
- SEM: New SCPI command to choose the side of the spectrum for the PASS/FAIL check.
  [:SENSe]:SEMask:SIDE POS|BOTH|NEG
  [:SENSe]:SEMask:SIDE?

Option 212 TD-SCDMA Modulation (option 212) Fixes / Changes:
- New SCPI Command to set the mode of code channel detection
  [:SENSe]:TDEMod:CDCHannel:DETection:AUTO 1|0|OFF|ON
  [:SENSE]:TDEMod:CDCHannel:DETection:AUTO?
- New SCPI command to get and set active status on the specified code channel
  [:SENSe]:TDEMod:CDCHannel:ACTive <integer>,<integer>,OFF|ON|0|1
  [:SENSe]:TDEMod:CDCHannel? <integer>,<integer>
- New SCPI command to get and set the midamble shift for the specified code channel
  [:SENSe]:TDEMod:MSHift:NUMBer <integer>,<integer>,<integer>
  [:SENSe]:TDEMod:MSHift:NUMBer? <integer>,<integer>

Option 215 Source Control Fixes / Changes:
Fixed dropout issue when using more than 2000 sweep points

A.10.07 October 31, 2007

EMC Analyzer (option 239) Fixes / Changes:
- Fixed issue where the "CAL:ALL?" SCPI query was not properly reflecting the alignment status of the N9039A RF Preselector connected.
- The EMI Peak detector setup was updated for improved performance with the N9039A RF Preselector and to comply with the current CISPR 16-1-1:2006 standard.
  NOTE: The N9039A RF Preselector also needs to have software version A.01.02 or later.

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A.10.05 September 24, 2007

Phase Noise (option 226) Fixes / Changes:
– Fixed regression in A.10.04 firmware that prevented delta markers from working via the front panel.

A.10.04 August 2, 2007

New Personality:
– 239 – EMC Analyzer

Core and Spectrum Analyzer Mode Fixes / Changes:
– ACP, Channel Power and SEM: Added ability to display PSD results in dBm/Hz or dBm/MHz
– Burst Power: Fixed Freeze when Burst Power width changed
– ACP: Fixed displayed offset markers when offset to edge chosen for cdma2000
– SEM: Improved SEM results when meas bandwidth > 1 when measuring CW signals
– SEM: Fixed freeze up when changing offset parameters when in single sweep

Phase Noise (option 226) Fixes / Changes:
– Fixed issue where setting delta marker 4 remotely did not work correctly

Programming Code Compatibility (option 266) Fixes / Changes:
– Fixed TITLE command for 856x compatibility

Option 241 Flexible Digital Modulation Analysis Fixes / Changes:
– Symbol Rate and IF Bandwidth lower limit extended down to 50 Hz when using the narrowband digitizer (previously it was 1 kHz)
– Improved 2FSK demod
– Improved 256 QAM demod in the presence of adjacent carriers.
– Improved 128 QAM demod

Option BAF/210 W-CDMA/HSDPA/HSUPA Fixes / Changes:
– CDP Measurement and Mod Accuracy (Reverse Link): Added support for when Bc/Bd = 1/15
– CDP (HSDPA): Fixed issue were non-zero tHD-DPCCH causes incorrect beta values

Option 204 1xEV-DO Fixes / Changes:
– Mod Accuracy and CDP (Reverse Link): Enhanced sync tolerance for the condition of low power in Pilot Channel

Option B78 cdma2000 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

Option 211 TD-SCDMA (option 211) Fixes / Changes:
– ACP/MCP: Sped up time when correcting the noise floor.
– All measurements: Added support for option 110 preamp
– PVT / TXP (multicarrier case): Fixed overload condition
– SEM: Added ability to perform single-sided measurement
– MCP: Added SCPI query result for total carrier power
– TXP: Fixed issue of burst width softkey being grayed out
– TXP and PVT: Changed threshold value for positioning the burst to be -6dB instead of -3dB
– TXP and PVT, Burst Width result now correct when "UpPTS & Timeslot1" or "Timeslot 0 & DwPTS" are ON
– Ramp Up / Down time now disabled when burst is not well positioned

– Active Channel now has newly added manual setting to allow user to specify active status for each code channel
– Midamble offset has new newly added manual setting so that the user can specify the midamble for each code channel

Measuring Receiver (option 233, N5531S) Fixes / Changes:
– TRFL: External attenuation setting is now used when determining switch levels
– TRFL: SCPI Command for setting range 2 to range 3 delay is now a SENSE command instead of DISPLAY command
– TRFL: Changed low band to high band frequency switch point to now be 3.05 GHz instead of 3.0 GHz.
– AM Depth: Limited capture time to 1 us – 10 s
– AM Depth: When IF bandwidth is set to min and 80 kHz low pass filter selected, the IF bandwidth is now 2*LPF (160 kHz) instead of previous selection of 600 kHz
– Analog Demod: When choosing a really small or really large capture time, the auto limit value will now correctly be displayed on the softkey.

A.09.19   March 03, 2007

Option BAF W-CDMA Fixes / Changes:
– W-CDMA Mod Accuracy Uplink: Fixed crash

Option 204 1xEV-DO Fixes / Changes:
– Mod Accuracy Forward Link: Fixed pilot offset difference between A.08.xx firmware and A.09.09 through A.09.18 firmware
– PVT: Fixed issue where PVT can not measure idle slot with high noise data channels because slot identification fails

A.09.18   December 13, 2006

New Options:
– 23A – AM/FM/PM Triggering for Measuring Receiver Personality (Option 233)
– 23B - CCITT Filter for Audio Measurements for Measuring Receiver Personality (Option 233)
– 212 – TD-SCMDA Modulation Analysis Measurement Personality
– 213 – HSDPA / 8PSK for TD-SCDMA Modulation Analysis Measurement Personality

Core and Spectrum Analyzer Mode Fixes / Changes:
– The alignment selection of "off" now functions the same as "alert"
– Fixed issue where Max Hold glitches when you change frequency with Max Hold on
– Fixed crash when mode switching between SA and any Comms app. This crash occurred after about 4000 mode switches and was due to a memory leak
– Fixed option 1DS preamp slow 2 seconds turn on time for some instruments when initially switching preamp on when AC coupled.
– Fixed issue where you could not specify via SCPI the trace type to store. The file type "Trace and State" was only available unless you changed the trace type via the front panel. This defect was introduced in A.09.09 firmware.
– Added default settings for SEM measurement for 802.11n radio standard
– Changed SEM W-CDMA Absolute Power Limits by 1.5 dB.
– Changed SEM Integration BW default value for 802.11a,g & Hyperlan/2 in SEM to 18 MHz
– Changed OBW W-CDMA video bandwidth to 300 kHz instead of previous setting of 1.3 MHz
– Changed CHP DVB-T Mask position.
– Spurious Emissions: Fixed incorrect behavior when two detectors are turned on at the same time.

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Basic (Options B7J, 122, 140):
- 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

Option 202 GSM w/ EDGE Fixes / Changes:
- EDGE ORFS: Fixed RF burst mistrigger issue for instruments with new analog IF board E4440-60226 (instrument with serial numbers US/MY/SG4430 and later).
- 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
- Added new display SCPI commands to allow user to remotely change the view
  :DISPlay:PVTime:VIEW[:SELect] ALL|BOTH|MSLot
  :DISPlay:EPVTime:VIEW[:SELect] ALL|BOTH|MSLot
  :DISPlay:ORFSpectrum:VIEW[:SELect] MPOWer|MLIMit|SPOWer|SLIMit
  :DISPlay:EORFspectr:VIEW[:SELect] MPOWer|MLIMit|SPOWer|SLIMit
  :DISPlay:PFERror:VIEW[:SELect] QUAD|POLar|DBITs
  :DISPlay:EEVM:VIEW[:SELect] POLar|CONStln|QUAD|DBITs

Option BAF W-CDMA 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
- Fixed issue where RF Input Range was unexpectedly changed to Auto after pream was turned on.

Option B78 cdma2000 Fixes / Changes:
- Added new SCPI command to turn on and off limit Lines
  :CALCulate:SEMask:LLINe:STATe ON|OFF|0|1

Option 204 1xEV-DO 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 PSA A.08 and PSA A.09.09 through A.09.14 firmware.

Wireless Lan (option 217) Enhancements and Fixes:
- Added RF Input Auto Ranging
- Added Auto / Manual selection for Video Trigger level setting in the trigger menu.
  [:SENSe]:VIDeo:TRIGger:LEVel:AUTO OFF|ON|0|1
- Fixed Crash while making EVM measurements

Measuring Receiver (option 233, N5531S) Fixes / Changes:
- Added Audio Input Auto Ranging
- Improved Residual AM accuracy
- TRFL: Added 3 second delay when switching from range 3 to range 1 to improve accuracy
- TRFL: Added "Range 3 Switch Delay" key
- TRFL: Updated Tuned RF Level Specifications regarding the amount of time required to wait when entering frequency bands above 3.05 GHz before making a TRFL measurement.
- Added "Fast Mode" key in meas setup menu for AM, FM, PM, Mod Rate, Mod Distortion and Mod Sinad
  :[SENSe]:AMDepth:FAST 0|1|OFF|ON
  :[SENSe]:FMDeviation:FAST 0|1|OFF|ON
  :[SENSe]:PMDeviation:FAST 0|1|OFF|ON
  :[SENSe]:MODRate:FAST 0|1|OFF|ON
  :[SENSe]:MODDist:FAST 0|1|OFF|ON
  :[SENSe]:MODSinad:FAST 0|1|OFF|ON
- Added "<measurement> Only" key in meas setup menu for AM, FM, and PM
  :[SENSe]:AMDepth:ONLY YES|NO
  :[SENSe]:FMDeviation:ONLY YES|NO
  :[SENSe]:PMDeviation:ONLY YES|NO
- Added "CF Step" in frequency menu

Phase Noise (option 226) Fixes / Changes:
- Fixed issue where Log Plot cancellation did not work. This regression was introduced in PSA A.09.09 firmware.
- When using external mixing, fixed issue where message, "Illegal Parameter" would appear and upper frequency range would be clipped.
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Option 211 TD-SCDMA (option 211) Fixes / Changes:
PVT:
- Resolution bandwidth fixed at 1.3 MHz and RBW softkey removed.
- Detector changed to Average. It was previously Sample.
- Enabled trace average
- Correction value of 0.675 dB added to the trace when using 1.3 MHz Gaussian filter instead of 1.28 MHz RRC filter
- Trigger line and ramp line added. On/Off control of trigger line, burst line, and ramp line added
- Sweep menu softkeys disabled
- Time difference between trigger line and burst line added in zoom window
- Algorithm for burst width measurement and drawing method of burst line enhanced
TxP:
- Resolution bandwidth fixed at 1.3 MHz and RBW softkey removed.
- Detector changed to Average. It was previously Sample.
- Correction value of 0.675 dB added to the trace when using 1.3 MHz Gaussian filter instead of 1.28 MHz RRC filter
- Sweep menu softkeys disabled
- Algorithm for burst width measurement and drawing method of burst line enhanced
ACP:
- Trigger source was added.
- Gate setup now coupled with both trigger source and burst type
- RBW change to 30 kHz
MCP:
- Trigger source was added.
- Gate setup now coupled with both trigger source and burst type
- Default value of Carriers changed from 4 to 3.
Spurious Emissions:
- Couple mode was changed from AC to DC.

SEM:
- Trigger source was added
- Gate setup coupled with both trigger source and burst type
- Offset detector set from Peak to Average
- RRC filter was employed for measuring carrier power
- Limits soft keys added. It denotes which mask is to be used in BTS measurement
- Limit mask of BTS corresponding to carrier power realized in terms of 3GPP standard.
- Spur issue at boundary of carrier and sideband A was eliminated

OBW:
- Trigger source was added
- Gate setup coupled with both trigger source and burst type

A.09.14   October 10, 2006

Measuring Receiver (option 233, N5531S) Fixes / Changes:
- Speed up of Tuned RF Level measurement by a factor of 3 times.
- Added ability to manually set frequency for Tuned RF Level Measurement
- Fixed minor drift issue for E4440A, E4443A, E4445A when making Tuned RF Level relative measurements

A.09.13   August 25, 2006

Core and Spectrum Analyzer Mode Fixes / Changes:
- Fixed lockup when presetting analyzer and doing a mode switch sequentially.
- Fixed issue regarding LAN settings being grayed out and not settable after upgrading to A.09 firmware.
- For option 117 (Secure Memory Erase) instruments, fixed issue causing "Error +753 Unable to save state to file" when changing modes.
- For E4446A, E4447A, E4448A with option 123, fixed amplitude inaccuracy when switching between unpreselected and preselected path.
- Option 233 (Measuring Receiver) fixed amplitude accuracy issue when measuring lower level signals with Tuned RF Level measurement

A.09.12   July 20, 2006

Core and Spectrum Analyzer Mode Fixes / Changes:
- Option HB6 (Password Protected Firmware Upgrades) – Updated option from a "bit flip" option to a standard license key enabled option. Note: option HB6, HS1 and HS7 are no longer recommended. New customers are recommended to use option 117 (Secure Memory Erase)
- Option H26 (26.5 GHz preamp) – Fixed issue due to latch switch not getting initialized at boot-up. Note: Option H26 is no longer recommend. Please instead order option 110 (10 MHz to 26.5 / 50 GHz preamplifer)

A.09.10   June 5, 2006

Support Added for the following new PSA Options:
- Option 107: Audio Input 100k Ohm for audio analysis in measuring receiver (option 233)
- Option 110 RF / Microwave Preamplifer 10 MHz to 26.5 / 50 GHz
- Option 111 USB Device-Side I/O (480 MBit/s transfer rate)
- Option 115 Extended Memory (512 MB) – Note: standard on all PSA9 or later instruments
- Option 117 Secure Memory Erase
- Option 123 Added support to E4446A, E4447A, E4448A for Switchable Microwave Preselector Bypass (Previously this option was only available for the E4440A, E4443A, and E4445A)
- Added HSUPA support to Option 210
- Enhancement to 1xEV-DO Rel A. (uplink / downlink) for option 204
- Option 233 Built-in measurement receiver up to 50 GHz (N5531S)

Core Firmware and Spectrum Analyzer Mode:
Enhancements:
- ACP: The minimum setting for Channel Integration BW and Offset Res BW has been changed to 10 Hz (Previously the minimum setting was 300 Hz)

Fixed Defects:
- SRQ Service Request over LAN caused firmware crash when using NI Visa
- E4446A, E4447A, E4448A: Slowed down maximum sweep rate for bands 3 and 4 to prevent drop in amplitude when sweeping.
- SA: Sweep time incorrectly reported when using EMI peak detector
- SA: Added new message to warn customers that EMI Average Detector is not available with VBW > 20 Hz.
- Special Handling option HGT (Time gate width of less than 10 uSec): This special handling option now shows up option string when the license is installed.
- CCDF – Fixed firmware crash issue by limiting the trace points to 10,000.
- SEM – If averaging was on, it would be turned off if you switched out of the measurement and then back into it

Option 226 Phase Noise:
Enhancements:
- Added support for option 110 preamplifier (10 MHz to 26.5/50 GHz)

Fixed Defects
- Removed extra points from exported log plot trace.
- Fixed defect where the marker readout was incorrect for the log plot measurement when in full screen setting.

Option 219 Noise Figure:
New Features:
- Added support for option 110 (10 MHz to 26.5 / 50 GHz preamplifier)

Option BAF W-CDMA (Including option 210 HSDPA/HSUPA:
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

VSA Personalities (Basic, W-CDMA, cdma2000, 1xEV-DO, cdmaOne, NADC, PDC, GSM, etc.):
Fixed Defects
- Waveform: Narrow band IF: I/Q constellation would change by 0 and 90 degrees when bandwidth was > 6.7 MHz.
- Waveform: Narrow band IF: When Gaussian filter selected, maximum bandwidth should be clipped to 8 MHz.
- All measurements: Sending SCPI commands that start with ":CONF" incorrectly triggered a restart of the measurement.

Option 202 GSM w/ EDGE:
Fixes:
- 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)

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Option 241 Flexible Digital Modulation Analysis:
>
> Fixed Defects:
> – PHS: All zero pattern caused firmware crash
> – Input Atten softkey was grayed out if preamplifier was turned on.

Option B78 cdma2000 (Including option 214 1xEV-DV):
>
> New Features:
> – Multi-carrier filter is now always on when doing demodulation measurement

Option BAF W-CDMA (Including option 210 HSDPA/HSUPA:
>
> 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

Synthetic Instruments only (Non PSA instruments):
Changes:
– Added support for licensed options H01 (RTCass Integrated Digitizer) and H02 (Integrated Digitizer)

Option 204 cdma1xEV-DO:
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:
– 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

A.09.09   May 1, 2006

– Please see the history for firmware version A.09.10. Firmware version A.09.09 had a defect that caused the amplitude response for frequencies greater than 3 GHz to read incorrectly when the option 1DS preamp was turned on while in Spectrum Analyzer mode.

A.08.09   November 22, 2005

Option 266 Programming Code Compatibility Suite:
Features Added or Enhanced:
– MKTYPE support
– MKA, MKP commands added support for working with MKTYPE of FIXED and AMP
– HP8566A and HP8568A are now in supported list of languages
– Bandwidth limitation available for 8560 and 8590 languages
Resolved Defects:
– RBW/Span ratio auto coupling now selects correct default for 8560 series on preset
– Fixed issue when selecting to use quasi peak detector front panel IF bandwidth limitation changed instrument to inadvertently use base PSA bandwidth values
– Fixed issue when selecting to use quasi peak detector front panel IF bandwidth limitation changed instrument to use base PSA bandwidth values
– Command sequences no longer require EOI or a termination character.
– MAV bit disabled for 66/68 languages

Option 202 GSM w/ EDGE:
– Improved EDGE EVM demod robustness for locking to the carrier over a wider frequency offset range.
– Changed default Frequency Error Tolerance Range from Wide to Normal to improve the measurement capability robustness for signals with poor signal to noise ratio.

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Option 226 Phase Noise:
- Fixed regression in A.08.06 firmware where log plot marker could incorrectly read 1E6 dBc
- Fixed regression in A.08.06 firmware where when using the DANL cancellation method, the marker displays the DANL trace values and not the active trace values.

A.08.07   September 2, 2005

Resolved Defects:
- SA Mode SEM mask regression introduced in version A.08.06 firmware

A.08.06   June 27, 2005

This package contains all measurement personalities.
Support Added for the following new PSA Options:
- Option 140 40 MHz Bandwidth Digitizer
- Option 217 Wireless LAN Measurement Personality

Features Added or Enhanced:
- Options 122 and 140 are now available for the E4443A and E4445A
- On-line-help, Trace math, Normalization, and Trace Importation
- Support for the E4447A
- Spectrum Emission Mask
  Support for ETSI EN 301 893 V1.2.3 (RLAN)
- Programming Code Compatibility Suite
  Support for QPD SCPI added
  Additional legacy commands added:
    8566/8568: Q0 (QPD off); Q1 (QPD on); OL (Learn String)
    856x: TH command
- Flexible Digital Modulation Analysis:
  More powerful analysis features
  Demodulation bits, Equalization filter displays, EV Spectrum, etc.
  Increase EQ taps for faster equalization
   ZigBee 2450M, VDL Mode3, APCO25 Phase 1
  Internal preamp (option 1DS) support
  DVBQAM Modulation Formats
  Additional Reference Filters
- cdma1xEV-DO:
  Subtype 2 (the new 1xEV-DO rev.A; revLink HDR) support
  Adaptive Modulation Coding signal support in symbol analysis
  Demodulated bits represent channel information
  Independent I/Q analysis
  Added view selections with Peak/Average Result Metrics and CDP with active channel table.
  MAC Channel Walsh code length on Code Domain View
- GSM/EDGE:
  Polar Modulation Analysis

Resolved Defects:
- Correct CISPRAuto-RBW in span 0 Hz now selected
- 321.4 MHz Key Label Changed
- Pwr Supply (Dither) key (On, Off) added to Service Menu
- System error when setting WB IF Capture Time
- System Error given if you :read:wav0?, readSTB, and then device clear
- Spurious Emissions:
  Memory Fault while using front panel Range Table.
- Spurious Emissions Mask:
  Trace is skewed if Scale/Div is adjusted to zoom.
- Adjacent Channel Power
  Combined view turns the Graticule off, does not turn it back on after exit with Meas Off

- Multi Carrier Power
  Coupling between Ref Carrier Mode and Ref Carrier Freq Mode missing.
- Programming Code Compatibility Suite
  Span now changes when signal tracking is on (PSA may take multiple sweeps to achieve required span.)
  8566/8568:
    Hold off of GPIB controller on recongnition of a 'TS' command
    RBW/VBW limitation to 1-3-10 step
  856x:
    PEAKS command returns results not formatted correctly
    Changed default sweep auto coupling rules to Best Dynamic Range
- All Comms Measurement Personalities
  Channel Power causes a crash when sweep time = 50 ms
  Invalid waveform bandwidth selection with Flat RBW Filter
  Default values for SPEC:FREQ:SPAN and SPEC:FFT:WIND:LENG changed.
- W-CDMA
  SSCH power is not correct
  Total Absolute Power is averaged in linear fashion when AVG is set to ON
  DPCCH Demod bits are inverted when Compressed Mode is tested.
  Demod Bits for packed mode does not work when Tx Diversity is selected.
  Sync function in CDP/RHO is improved for Multi-Carrier condition.
- Flexible Digital Modulation Analysis:
  Sync word search now working with QAM128, FSK, and OQPSK format.
  1st symbol of OQPSK signal is missed with using External Trigger.
  Memory Fault error caused by wide IFBW setting with low Symbol Rate and long Meas Interval.
  CONF:EVM changes IF path to Narrow if analyzer set to IF Path Wide.
  EVM incorrect when measuring short length burst.
  Auto scaling of EVM not working correctly when FSK is selected.
  Max of Quad Skew and IQ Gain Imbalance now takes negative values.
  Trigger timing shifts as IFBW increases.
  EQ Filter Length limited to 9
- cdma1xEV-DO:
  Auto-scale for PvT does now working
  'Meas Offset' in CDP Demodbits is misleading
  Specification for Frequency Error Range corrected.
- GSM/EDGE:
  PFER shows odd phase error at the last point
  Backward compatibility issue for ORFS:LIST
  ORFS does not take into account Absolute limit in Modulation Swept mode.
  ORFS6? and EORF6? now initialized so previous data does not remain when data length is shorter.
  Customer test limit with skipped offsets not working.

A.07.13   March 1, 2005

This package contains all measurement personalities.
Features Added or Enhanced:
- Support for option 215 External Source Control

Resolved Defects:
- 80 MHz Bandwidth Digitizer:
  Power-on self-test failure.
- Improves 10 Hz residual sidebands for RBW ≤7 Hz
- Instrument crash during long repeated Spurious Emissions measurements.
- Intermittent alignment failure on instrument bootup.
- GSM/EDGE:
  ORFS switching for mobile handsets gives false failure.

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A.07.08   December 16, 2004

This package contains all measurement personalities.

Resolved Defects:

- W-CDMA:
  A crash happens in changing capture length at single trigger.
  3 frame captured data is clipped as 2 frame data
  Mod Accuracy: SSCH power is not correct (same as PSCH).
- Flexible Digital Modulation Analysis:
  PI/4 DQPSK Constellation Rotates several degrees forward and reverse in phase.
  EDGE filter selections doesn't work in some sequences.
- GSM/EDGE:
  EDGE EVM WSoD Crash when valid burst not found
  ORFS Switching for MS gives FAIL flag but no offset are failures.

A.07.06   Nov 1, 2004

This package contains all measurement personalities.

Features Added or Enhanced:

- Flexible Digital Modulation Analysis:
  Support added for 80MHz Wideband Digitizer, option 122
  Support added for Microwave Preselector Bypass, option 123
  Measurement Intervals extended; Max: 20000 symbols at 1 pps, 10000 at 2 pps, 5000 at 4 pps, and 4000 at 5 pps.
  Pi/4 DQPSK now supports Carrier Lock Wide
- GSM/EDGE:
  EVM frequency lock range improved
  Pvt now supports setting a mask with Ext Trigger and a Trigger delay.
  In ORFS measurement, a delta-to-limit result column has been added.
  Support added for trigger to T0 measurement in EDGE EVM.
  Support added for multi-carrier tolerant filter in EDGE EVM and GSM PFER.
  Test limits user interface added to EDGE EVM, GSM PFER, and ORFS
  Sync type added to support Tx diversity (Antenna-2)
- W-CDMA:
  Statistical results (Max/Worst hold, RMS average) added for RHO measurements
  Limit fail color added to RHO table view
  When the DPCH with non-zero tDPCH is selected for analysis, "First Slot Number" is now DPCH-based.
  Active channel detection improved
  CDE measurement added to Code Domain
  Symbol EVM Analysis capability enhanced
  UE Phase discontinuity measurement supported in Power Control
  Transient Period (25us) Include/Exclude mode added to Mod Accuracy Uplink
  TSTD Antenna-1/2 sync modes added to Mod Accuracy Downlink
  PICH special handling enhanced for Mod Accuracy Downlink

Resolved Defects:

- Peak search fails to find peak for equal signals near LO.
- Pre-ADC BPF soft key makes numeric value an active function.
- Flexible Digital Modulation Analysis:
  FSK Burst is not measuring burst signal correctly
  Transition to OQPSK from other formats with Points/Symbol=1 causes fatal error.
  Actual search length is shorter than specified value.
  Trigger Offset is not properly reflected in Trigger Delay function.
  Symbol index of Peak Mag Error not correct with some setups.
  Peak Mag Error is very large when Points/Symbol is 10.
  I/Q Offset Include/Exclude in Advanced settings does not work correctly.

- GSM/EDGE:

   :READ:PFER? And :READ:EEVM? now waits until a valid signal is present.

   Marker readout is now shown on "Swp Spectrum" and "Limit Modulation" traces.

   EDGE PVT mask for sync burst is now GMSK.

   Limit mask values now consistent with standards for PCS 1900 MS, PvT test limits

- W-CDMA:

   RHO7? now returns correct values when symbol rate is 480/960ksps.

   Mod Accuracy STTD time offset measurement now limits capture length to 1 slot.

- cdma2000:

   There now is active channel detection for larger power deltas between pilot and other channels

   Log Code Mask default change to "0000000000"

A.06.05 September 2, 2004

This package contains all measurement personalities.

Resolved Defects:

- Option 122 80 MHz Bandwidth Digitizer:

   IP forwarding was not properly configured and could cause network issues.

A.06.04 August 18, 2004

This package contains all measurement personalities.

Added Optional Measurement Personalities:

- Option 122 80 MHz Bandwidth Digitizer
- Option 123 Switchable Microwave Preselector Bypass
- Option 124 Y-Axis Video Out (HP 8566/68B compatibility)
- Option 241 Flexible Digital Modulation Analysis

Features Added or Enhanced:

- Faster speed: ACP, power-up, mode switching
- EMI quasi-peak detector w/CISPR & Mil Std. Bandwidths
- Code Compatibility:

   Agilent 856x and 859x portables

- Support for N5530S Measuring Receiver Software
- Support for option 235 Wide BW Digitizer External Cal Wizard
- S-DMB System E Radio Standard now supported by Channel Power, Adjacent Channel Power, and Occupied Bandwidth Measurements
- Spurious Measurement:

   FCC Part 15 Subpart F Radio Standard supported

   UWB Indoor Radio Standard supported

   Added Dual Trace Display

   Sweep points and detector now selectable per Range

   Amps, dBmA, dBuA, dBuV/m, dBuA/m, dBpT, and dBG units added to Y axis units

Resolved Defects:

- Preselector peaking in bands 5 and 6 incorrect.
- Marker delta amplitude function not working correctly in Basic mode.
- Incorrect image saved to file if trace screen is stale or overwritten.
- Channel Integration Bandwidth and Frequency Offset in Adjacent Channel Power and Multi Carrier Power is too narrow, increased from 20 Hz to 500 MHz.
- MODE key choices disappear when battery dies.
- Frequency span not set correctly if FREQ:SPAN is sent immediately after CALC:MARK:TRCK ON
- Limit lines drawn incorrectly in time domain.
- Counter Error in spans >1.5 GHz
- FFT Noise Marker accuracy improved.
- Preset restores display if display has been turned off.
- Video trigger line does not update correctly when display scale is set to linear.

- – GET now conforms to the IEEE488-75 standard.
- – Delta Marker sign value reversed in Transmit Power, Pwr vs Time, and Spectrum Emission Mask measurements.
- – Noise Figure:

    Limit lines Pass/Fail Test incorrect if Limit freq range < Sweep range

    Setting conf:nfg, changing RBW, and then doing a cal, invalidates the cal when the result sweep takes place.

    Switching Preamp on/off breaks the following cal cycle

    Cannot set start frequency >2.87 GHz after a Restore Meas Defaults
- – Phase Noise:

    Log Plot markers not being updated correctly in single swept mode.

A.05.07   March 19, 2004

This package contains all measurement personalities.

Resolved Defects:

- – E4446 and E4448 only. Above 26.4 GHz the preselector may not center properly.

A.05.06   November 20, 2003

This package contains all measurement personalities.

Added Optional Measurement Personalities:

- – Option 210 HSDPA (requires Option BAF W-CDMA)
- – Option 211 TD-SCDMA
- – Option 214 1xEV-DV (requires Option B78 cdma2000)

Features Added or Enhanced:

- – Support for Option AYZ External Mixing
- – Improved and added several warning and error messages
- – Auto coupling improved.

Resolved Defects:

- – On power-up, +605 error displayed (data corrupt and restoring NVRAM copy of data) when CPU battery is depleted.
- – Instrument lockups due to various combinations of RBW, sweep time, detector, and gate delay settings.
- – When Auto Sweep Time is set to Accy, there is no constraint on the sweep rate causing inaccurate results.
- – Frequency errors when gating with a wide span and manually setting RBW.
- – Preselector fails to center properly with points per sweep set to >601, or span >1.3 GHz with Delta Marker on, or below 3.2 GHz.
- – Error in zero span when using average detector.
- – :CALC:DATA:COMP commands not functioning correctly.
- – Amplitude variance at beginning of sweep when changing parameters in zero span and the LO is in dual loop mode.
- – LO settling time not sufficient in zero span when Phase Noise Optimization is set to Fast Tune.
- – Time and date format now survives a power cycle.

A.04.12   September 12, 2003

This package contains all measurement personalities.

Features Added or Enhanced:

- – Support for Gated Sweep.

A.04.07   Feb 28, 2003

This package contains all measurement personalities.

Features Added or Enhanced:

- – Phase Noise improvement for 1st LO.

Resolved Defects:
- GSM/EDGE:
  Trace misalignment of 1 symbol with respect to GSM PFER when Burst Align=1/2 bit offset.
  Intermittent mask failures for PvT Multislot measurements.
  GSM PvT and EDGE PvT crash when Trig Source is Free Run and all slots are on.
  GSM PFER measurement I/Q Measured Polar Vector sometimes crashes if synchronization is not established with the given signal data.
- W-CDMA:
  If the P-Scramble code is set to > 7, the SSCH Power result is not correct.
- Cdma1xEV-DO:
  Pilot offset value changes with the ChanType Pilot or Overall Rho settings.
  Rho Result Metrics for Ch level and Code number with Overall setting miscalculated.
  The Auto "Input Atten" can take on negative values when the input signal level is to low.
  The "Ext RF Atten" effects the input attenuator value.
  The "Max Total Pwr" excessively increments the "Ext RF Atten" when the "Ext RF Atten" is set to any value except 0 dB.
  TCDP, "Restore Meas Default" key doesn't work correctly

A.04.06   February 11, 2003

This package contains all measurement personalities.
Resolved Defects:
- The detector mode in ACP measurements could inadvertently be set to normal.

A.04.05 REL 001   December 16, 2002

Added Optional Measurement Personalities:
- Option 219 Noise Figure Personality

Features Added or Enhanced:
- DVBT and IS-95 added to Spectrum Analysis Radio Standards.
- 802.11a, 802.11g radio Standards added to SEM Measurement
- Option 266 is now compatible with other measurement personalities.
- More compatibility commands added to Option 266 8566/68 Series Code Compatibility.
- FFT sweep time estimates improved.
- Display enhancements:
  Limit lines now have a lower limit of –140 dBm.0
  Active Function Positioning
  Annotations can now be blanked
  Graticule can be turned on and off.
- GSM/EDGE:
  TxSpur now available for GSM450, 480, 850, and 700.
  Speed improvements
- W-CDMA:
  calc:data:comp? can now average dBm values.
  Total power added to "One Slot CDP" query.
  Support for Compressed Mode
- Cdma1xEV-DO:
  Added Reverse link support for Mod Accuracy
  Automatic Preamble detection
- Cdma2000: :
  OFFSET to Edge support for ACPR and SEM

Resolved Defects:
- Frequency Count errors in band 5 (26.4GHz to 31.15 GHz.)
- 1st IF Overload message caused by turning the Preamp on and then off.
- Changing the Stop Frequency, changes the Start Frequency.
- Trigger to t0 measurement may return reading that is off by ~200 ns in 1out of 300 readings.

- IF Output frequency jitter when analyzer is set to zero span, continuous sweep, and RBW≥220 kHz.
- Analyzer may hang when in FFT Mode and span is set to 1GHz or 2 GHz.
- Marker Peak Threshold not working when the amplitude scale type is changed.
- Messages, such as "Preparing Display…" may remain on screen even after the condition has gone away.
- Clear Write doesn't erase the trace data.
- GSM/EDGE:
  Demod RMS Magnitude and Phase result incorrect when Burst Sync=RFAmptd.
- W-CDMA:
  Modulation Accuracy Frequency Error Result returns value from wrong slot.
  CDP tDPCH auto detection doe not work in long mode.
  Channel power at Q-axis in quad view is incorrect.
  Symbol Power vs. Time gives incorrect power reading for uplink measurement.
  Frame period incorrect after doing "Factory" preset and changing from Spectrum Analysis Mode to W-CDMA mode.
- Cdma2000:
  Channel power at Q-axis in quad view is incorrect.
  Long Code Mask not working for Reverse Link (MS).
- CdmaOne:
  No Y scale/division readout for timing <1 μs.
- cdma1xEV-DO:
  All errors reported with error number +1101.

A.03.05 REL 011   October 24, 2002

This package contains all measurement personalities except Option 266.
Resolved Defects:
- W-CDMA:
  Code Domain power quad view channel power measurements results may be in error up to 0.45 dB.

A.03.04 REL 010   July 8, 2002

This package contains Option 266 only.
See A.03.04 REL 009 for base firmware history.

A.03.04 REL 009   July 8, 2002

This package contains all measurement personalities except Option 266.
Resolved Defects:
- GSM/EDGE:
  PK EVM and 95% EVM for severely impaired EDGE signals

A.03.03 REL 008   May 30, 2002

This package contains Option 266 only.
See A.03.03 REL 007 for base firmware history.
Added Optional Measurement Personalities:
- Option 266 8566/68B Code Compatibility
- This package does not support other measurement personalities.

A.03.03 REL 007   May 30, 2002

This package contains all measurement personalities except Option 266.
Added Support for new instruments:
- E4446A (3 Hz – 44 GHz)
- E4448A (3 Hz – 50 GHz)

Features Added or Enhanced:
- – Amplitude Corrections
- – 64Mb Flash Memory Support
- – 89600 Support
- – Limit Lines
- – Variable Sweep Points
- – Spectrum Analysis Measure, many enhancements including:
  Multi Carrier Power: Now supports up to 12 carriers
  Spectrum Emission Mask: Support for 802.11a/b and HiperLAN
- – All Comms Apps: Now supports high crest factor signals.
- – GSM/EDGE ORFS switching speed improvement
- – Option 1DS PreAmp: Turned ON for W-CDMA, cdma2000, cdma1xEV-DO
- – W-CDMA: Pre-defined Test Model update for Code Domain and Mod Accuracy to conform to latest 3GPP standard.
- – W-CDMA SEM: Reference signal power measurement improvement
- – Cdma2000 SEM: Default setting improvement

Resolved Defects:
- – Amplitude reduction during multi-band sweeps
- – Spectrum Analysis Measure:
  Spurious Emissions lock-up when entering measurement many times.
  Harmonic Distortion lock-up when sending CONF:HARM command followed by INIT:IMM using GPIB.
  INITiate:CONTinuous ON command not working correctly.
- – Phase Noise:
  READ:LPL? Returns incorrect values for DEG/RAD and RES FM with 10kHz to 1MHz Spans.
  Instrument goes into loop condition switching between Log Plot and Monitor Spectrum.
  Log Plot Markers not functional after Power On Preset.
- – GSM/EDGE:
  PvT averaging, external trigger delay, and multi-slot midamble defects
  Orfs frame trigger defects
- – W-CDMA:
  ACLR sweep and dynamic range defects
  CDP tDPCH value and graph annotations for X-axis incorrect.
  PICH symbol EVM does not function.
- – Cdma2000:
  CDP graph annotations for X-axis incorrect and marker resolution cannot be changed after device change without preset.
- – cdma1xEV-DO:
  RHO, I/Q Error measurement marker error
  CDP total power not recalculated when needed.
  :DISPlay:RHO:VIEW SCPI command not working correctly.
- – CdmaOne:
  Mod Accuracy, Time Offset measurement reports wrong value.
  Spur Close measurement mask not correct.

A.02.07 REL 010   April 26, 2002

Resolved Defects:
- – Phase Noise: Residual FM measurement accuracy improvement

A.02.07 REL 009   March 18, 2002

Resolved Defects:
- – Auto Alignment causes crash during FFT measurements.

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A.02.05 REL 008   March 1, 2002

Resolved Defects:
- Crash when switching from CDMA2000 to GSM/EDGE mode, then selecting Data Bits view.
- Crash when in channel power while changing center frequency and RBW.
- W-CDMA correlation failures (error 503) with SCH sync mode in Mod Accuracy.
- CdmaOne RHO measurement intermittently fails to correlate signal.
- LO unlocks after setting phase noise optimization manually to f<50 KHz with span set to <50 MHz and then setting span to > 50 MHz.
- Instrument hangs after switching between modes during an Align All Now.
- "Align All Needed" message not consistent with instrument alignment being needed.
- LO loop optimization causing 1st LO unlock errors.
- Calibrator display corrupted when setting attenuator with Trace set to Min Hold.
- Amplitude loss while displaying two frequency band breaks simultaneously and narrowing RBW.

A.02.04 REL 004   January 1, 2002

Added Optional Measurement Personalities:
- Option 204 1xEV-D0 Measurement Personality

Resolved Defects:
- Phase Noise Personality:
  Crash when using remote access to switch to log plot after power cycle.

A.02.04 REL 001   December 7, 2001

Added Optional Measurement Personalities:
- Option BAF W-CDMA Measurement Personality
- Option B78 cdma 2000 Measurement Personality
- Option 226 Phase Noise Measurement Personality
- Option BAC cdmaOne Measurement Personality
- Option 202 GSM (with EDGE) Measurement Personality
- Option BAE NADC/PDC Measurement Personality

Added and Enhanced Standard Power Suite Measurements:
- Adjacent Channel Power
- Burst Power
- Channel Power
- Complimentary Cumulative Distribution Function (CCDF)
- Harmonic Distortion
- Multi Carrier Power (MCP)
- Occupied Bandwidth (OBW)
- Spectrum Emissions Mask (SEM)
- Spurious Emissions
- Third Order Intercept (TOI)

Added Radio Standard Parameter Setups for Power Suite Measurements:
- IS-95
- J-STD-008
- NADC
- GSM/EDGE
- 3GPP W-CDMA
- cdma2000 SR1
- cdma2000 SR3-MC
- cdma2000 SR3-DS
- PDC
- Bluetooth

Resolved Defects:
- Flatness corrections applied in linear scale.
- Repaired signal drop on signal band crossings.

A.01.09

Resolved Defects:
- Improvement in the accuracy of long averaged detection sweeps.

A.01.08

Resolved Defects:
- Improvements made to the FFT mode including auto-coupling, spans, and signal locking.

A.01.04   January 5, 2001

This was the first code shipped to customers.