

# Agilent PSA Spectrum Analyzer Firmware Revision History

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## 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.

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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

### 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:**

- 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 1<sup>st</sup> 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.)
- 1<sup>st</sup> 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  $RBW \geq 220$  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.

#### **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 1<sup>st</sup> 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.

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#### **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.
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## 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.
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#### **A.01.09**

##### Resolved Defects:

- Improvement in the accuracy of long averaged detection sweeps.
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#### **A.01.08**

##### Resolved Defects:

- Improvements made to the FFT mode including auto-coupling, spans, and signal locking.
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#### **A.01.04 January 5, 2001**

This was the first code shipped to customers.

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