Agilent Series V2800
Vector Signal Analyzer

Firmware Release Notes

Agilent Technologies

Notices

Manual Part Number

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Sales and Technical Support

To contact Agilent for sales and technical support, refer to the "support" links on the following Agilent web resources:

- www.agilent.com/find/V2820A
  (product-specific information and support)

- www.agilent.com/find/assist
  (worldwide contact information for repair and service)

Information on preventing damage to your Agilent equipment can be found at www.agilent.com/find/tips.

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Safety Notices

The following safety precautions should be

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

> ## Updating your product's firmware:
>
> The process for installing a firmware update on the Series V2800 VSA is provided on page 22 of this document (see Firmware installation process). If you are installing the Series V2800 Desktop Control Panel for the V2820A, refer to the installation instructions in the *Agilent V2820A Installation and Quick Start Guide*, provided in your ship kit, on the CD-ROM, and at www.agilent.com/find/V2820A.

Version 6.0 firmware release overview

The Series V2800 Vector Signal Analyzer version 6.0 release introduces three firmware enhancements. Additionally, version 6.0 resolves one firmware concerns.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 5.1	From version 5.0	From version 5.0
Recalibration required	No	No	No
Requalification suggested	No	No	No

Version 6.0 firmware enhancements

Enhancement	2810	2820	V2820A
Improved dynamic range and spur performance of Spectrum measurement for narrow resolution bandwidths.	X	X	X
Added a Phase Noise custom measurement. For details consult your local Agilent representative			X
Added method to recall limits for GSM and EDGE time masks. Load Default added to GSM and EDGE time masks file menu. Added these SCPI commands: `[:SENSe]:GSM:TMASk:DEFault`, `[:SENSe]:EDGE:TMASk:DEFault`.	X	X	X

Version 6.0 firmware critical fixes

Critical fixes: Symptom	Resolution	2810	2820	V2820A
PR13674: Corrected non-compliant SCPI syntax for `:TRIGger[:SEQuence]:AUTO:TIMEout`	Corrected syntax: `:TRIGger[:SEQuence]:AUTO:TIMeout`	X	X	X

Version 5.1 firmware release overview

The Series V2800 Vector Signal Analyzer version 5.1 release introduces seven <u>firmware enhancements</u>. Additionally, version 5.1 resolves forty-one <u>firmware concerns</u>.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 4.2	From version 5.0
Recalibration required	No	No
Requalification suggested	No	No

Version 5.1 firmware enhancements

Enhancement	2810	2820	V2820A
To provide the ability to demodulate a WCDMA/HSPA carrier in a multi-carrier transmission, added a control to enable/disable multi-carrier in WCDMA DL Demodulation. Added the `[:SENSe]:WCDMa:DOWNlink:MULTicarrier[:STATe]` command, and added a "Multi-Carrier" checkbox to the WCDMA Downlink settings menu.	X	X	X
Increased the Zero Span maximum sweep time from 30 seconds to 60 seconds. The sweep time is set with the Zero Span measurement panel, and with the `[:SENSe]:ZSPan:SWEep:TIME` command.	X	X	X

Added SCPI commands to return the individual GSM phase error and EDGE EVM data.
 	
These commands return the individual results that comprise the `:CALC:GSM:PERR:DATA` query:
`:CALCulate:GSM:PERRor:RMS`
`:CALCulate:GSM:PERRor:PEAK`
`:CALCulate:GSM:PERRor:PEAK:BIT`
`:CALCulate:GSM:PERRor:CFERror`
`:CALCulate:GSM:PERRor:CFEedthru`
`:CALCulate:GSM:PERROR:IQIMbalance`
 	
These commands return the individual results that comprise the `:CALC:EDGE:EVM:DATA` query:
`:CALCulate:EDGE:EVM:RMS`
`:CALCulate:EDGE:EVM:PEAK`
`:CALCulate:EDGE:EVM:P95`
`:CALCulate:EDGE:EVM:CFERror`
`:CALCulate:EDGE:EVM:IQGError`
`:CALCulate:EDGE:EVM:IQOOffset`
`:CALCulate:EDGE:EVM:DROop`
	X	X	X

Enhanced the marker configuration (**Menu > Global Settings > Marker Config**). Added separate excursion and threshold values for Hz, degrees and percent, in addition to the existing values for dB. Modified the peak search algorithm to search for bidirectional peaks (upward and downward) on traces with units of Hz, degrees and percent.
 	
Modified the existing SCPI command to add optional units:
`:CALCulate:MARKer:EXCursion[:DECibel]`
`:CALCulate:MARKer:THReshold[:DECibel]`
 	
Added new commands for degrees, Hz, and percent:
`:CALCulate:MARKer:EXCursion:DEGrees`
`:CALCulate:MARKer:THReshold:DEGrees`
`:CALCulate:MARKer:EXCursion:HZ`
`:CALCulate:MARKer:THReshold:HZ`
`:CALCulate:MARKer:EXCursion:PERCent`
`:CALCulate:MARKer:THReshold:PERCent`
	X	X	X

Added top line to General Purpose SEM chart (e.g., for Peak Spectral Density) to make it easier to view the displayed data..	X	X	X

Enhancement	2810	2820	V2820A
Added ability to adjust time and frequency offsets for MIMO operation. See **Menu > Global Settings > Carrier Offsets**. Related SCPI commands are `[:SENSe]:PHASe:ADJust` and `[:SENSe]:FREQuency:OFFSet`.		X	X
It is important to keep the center frequency of the MIMO master and all slaves the same. To help user avoid causing a disparity in the frequency, if you attempt to change the Center Frequency on a unit that is a Master or a Slave, the unit will respond with the error message "Verify MIMO Master and all MIMO Slaves are tuned to same frequency."		X	X

Version 5.1 firmware critical fixes

Critical fixes: Symptom	Resolution	2810	2820	V2820A
PR13566: The green trigger line not present on custom measurement displays.	The custom measurement code was modified to add the trigger line on the display, with a Y axis of dBm.	X	X	X
PR13560: There is no indication (yellow banner message) when a custom measurement data cannot be decoded.	The custom measurement code was modified to display appropriate error messages for custom measurement errors.	X	X	X
PR13559: WCDMA UL Group custom measurement does not display user flatness offset indicator (Offs).	The custom measurement code was modified to correct this problem.	X	X	X
PR13551: Using Zero Span, changing the trace type results in an incorrect measurement.	The firmware was modified to correct this problem.	X	X	X
PR13522: Changes to the trigger timeout setting are ignored in the 802.11 SEM measurement.	The firmware was modified to correct this problem.	X	X	X
PR13520: The yellow banner 'Trigger Delay Limited' does not automatically clear after adjusting trigger delay or changing the trigger type.	The firmware was modified to correct this problem.	X	X	X
PR13518: The yellow banner 'Bandwidth Too Large' does not automatically clear after adjusting the Zero Span bandwidth or filter type.	The firmware was modified to correct this problem.	X	X	X
PR13517: The yellow banner 'Timespan Limited' does not automatically clear after adjusting the Sweep Time.	The firmware was modified to correct this problem.	X	X	X
PR13516: The yellow banner 'ACQ Interval Exceeded' does not automatically clear after adjusting the Acquisition Interval.	The firmware was modified to correct this problem.	X	X	X
PR13508: The marker resolution display in Zero Span is limited to 1 µs.	The firmware was modified to increase a marker resolution to 1 ns.	X	X	X
PR13506: Using General Purpose SEM, and trigger mode of 'On Measurement', acquisition time is delayed, adversely affecting measuring SEM on pulsed waveforms (especially problematic with WLAN and WiMAX).	The firmware was modified to correct this problem.	X	X	X
PR13501: When using frequency vs time, the makers will not measure after the trigger external has occurred.	The firmware was modified to correct this problem.	X	X	X
PR13494: Making General Purpose SEM measurement with peak spectral density Sweep Mode and a non-group average type, results in an incorrect level (limit line is inaccurate).	The firmware was modified to correct this problem.	X	X	X

Critical fixes: Symptom	Resolution	2810	2820	V2820A
PR13487: The General Purpose SEM measurement is updated when closing the trigger settings dialog (should not affect an update).	The firmware was modified to correct this problem.	X	X	X
PR13435: Closing the trigger settings dialog causes the trace to disappear.	The firmware was modified to correct this problem.	X	X	X
PR13421: Large magnitude flatness errors in the WiMAX 802.16x graph are clipped and not seen until manually changing the Scale/div setting.	The firmware was modified to correct this problem.	X	X	X
PR13343: Using WDMA Downlink Demodulation, experience high EVM for signals with PICH enabled when HSDPA is enabled.	The firmware was modified to correct this problem.	X	X	X
PR13340: Using a MIMO system and Model V2800 Desktop Control Panel software, after storing the master's and slave's user preset, upon invoking a preset both instruments are restored with the slave's settings.	The Desktop Control Panel software was modified to correct this problem with user preset storage and retrieval.			X
PR13332: The zero span scale/ division command (:DISPlay:WINDow:TRACe:Y[:SCALe]:PDIVision:ZSPan:FREQuency) is not always set as programmed.	The firmware was modified to correct this problem. Also added an implementation note in the help system: "The set value is limited to a 1-digit resolution via truncation. For example, 39000 Hz will be truncated to 30000 Hz, and 1100000 Hz will be truncated to 1000000 Hz."	X	X	X
PR13309: GSM and EDGE demodulation will not work with external triggers on a negative delay.	The firmware was modified to allow demodulation with both positive and negative trigger delays.	X	X	X
PR13308: GSM and EDGE measurements allow y-axis scale (Scale/div setting) to go to 0.00 dB/div	The firmware was modified to correct this and set the minimum to 0.1 dB/div.	X	X	X
PR13284: The V2800 Desktop Control Panel window does not show if the last-used position was in a second monitor.	The software was modified to correct this problem. If no part of the main window is visible on any monitor, the window will be positioned at the center of the primary display.			X
PR13278: There is presently no compatibility check between an installed custom measurement and the firmware.	The firmware was modified to check to compatibility with the current firmware revision. If an incompatibility is detected, the appropriate power-up error message is displayed. The potential error messages are listed in the help system (see **Troubleshooting > Custom Measurements Troubleshooting**).	X	X	X
PR13264: Instrument experiences frequency/phase rotation when demodulating WiMAX (802.16x) signals.	The firmware was modified to correct this problem.	X	X	X
PR13244: Increasing the sweep time increases the measurement time (expected), but can be increased to the point where the instrument times out.	The firmware was modified to eliminate timeouts. Added a note to the help system: "Setting the sweep greater than the minimum (0.0000003 seconds) will proportionally increase the measurement time."	X	X	X
PR13217: Missing context-sensitive help links for Licensing dialogs (**Menu > Utilities > Licenses >** Add/Transfer/View).	The firmware was modified to correctly link to the relevant help topics.	X	X	X

Critical fixes: Symptom	Resolution	2810	2820	V2820A
PR13209: The IQ Gain Error value reported by the `:CALCulate:EDGE:EVM:DATA?` command is incorrect (by a factor of 2).	The firmware was modified to correct this problem.	X	X	X
PR13170: The help system incorrectly documents the return values for `:CALCulate:GSM:PERRor:DATA` and `[:SENSe]:GSM:PERRor:IQIMpair[:STATe]`.	The help system errors were corrected.	X	X	X
PR13143: The `:MMEMory:DATA` command uses an inappropriate default directory (\temp).	The firmware was modified to change the default directory to \Storage Card\User\...	X	X	X
PR13136: When powering up with 100 MHz input disconnected, the instrument hangs on the "Starting application…" power-up message.	The firmware was modified to correct this problem.		X	X
PR13041: On the help system main page, the "General purpose and digital demodulation" link is broken.	Help system corrected. Changed text to "Making Measurements" and linked to a more effective help page.	X	X	X
PR12947: SEM measurement for WLAN is incorrect.	Modified the firmware to add a sweep time setting for General Purpose SEM (**Settings > Sweep Time**). Added these commands to control the settings: `:SPECtrum:SWEep:TIME` `:SPECtrum:SWEep:TIME:AUTO`	X	X	X
PR12864: SCPI Command Locator is out of date.	The help system (Command Locator) is updated.	X	X	X
PR11954: Help system error: `[:SENSe]:EDGE:SLOT:TYPe` syntax is not compliant with SCPI rules, it should be `[:SENSe]:EDGE:SLOT:TYPE`.	The command syntax was corrected in the help system.	X	X	X
PR11952: Help system error: The default value for `[:SENSe]:DSP:RANDomize[:STATe]` should be `1` or `ON` (help system says the default is `0` or `OFF`).	The command description was corrected in the help system.	X	X	X
PR11855: If you adjust the scale on an 802.11SEM plot while you are not sweeping, the limit line does not scale, but the spectrum trace does, leading to confusion. When you hit the sweep button, the limit trace scales appropriately.	The firmware was modified to correct the limit line scaling problem.	X	X	X
PR11724: WiMAX (801.16x): Map file editing doesn't always cancel action when exiting, or when using the `[:SENSe]:WIMax:MAP:EDIT:CANCel` command.	The firmware was modified: WiMAX map edit mode is now set when a burst or zone is added. This will result in the currently loaded map being restored if editing is canceled without loading after adding a zone or burst..	X	X	X
PR11712: The `[:SENSe]:GPSEM:AVERage:TYPE` command description in the help system erroneously lists GMMax as a parameter.	GMMax was removed from the command description (GMAX is still a valid parameter).	X	X	X
PR11509: `:CALC:DATA?` should return a single NaN value (or representative number of values) when the measurement is disabled or if Trace Type = None. Instead, the query returns nothing and times out.	The firmware was modified: A single Not A Number (NaN) is returned when the measurement data is not valid.	X	X	X
PR10984: The LXI Screen Capture function fails after a "Mass Storage Error" is encountered on the instrument.	The firmware was modified to correct this problem.	X	X	X

Version 5.0 firmware release overview

The Series V2800 Vector Signal Analyzer version 5.0 release introduces twenty-seven new firmware enhancements. Additionally, version 5.0 resolves twenty-two firmware concerns.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 4.2
Recalibration required	No
Requalification suggested	No

Version 5.0 firmware enhancements

Enhancement	2810	2820	V2820A
Added support for the new Series V2800 Desktop Control Panel software. For details, see page 12.			X
Added support for the new V2820A RF Vector Signal Analyzer.			X
Added "Low Phase Noise" control to enable/disable the ultra-low phase noise features in the V2820A-UPN product option. Toggle the low phase noise mode on and off in the UI (Menu > Global Settings > Advanced > Low Phase Noise) or with the SCPI command `[:SENSe]:LPN:STATe`.			X
Added W-CDMA UL & DL measurement capabilities to cover 3GPP releases 6 and 7: • W-CDMA Uplink: HSUPA (requires V2800A-108 and V2800A-106 licenses), when enabled, adds 4PAM modulation detection. Added Symbol EVM. Added Code Domain identification of 4PAM modulation. Trace Type > Code Domain shows all OVSF code channels simultaneously. • W-CDMA Downlink: HSDPA (requires 2800-HSPA-D and 2800-WCDMA-D licenses), when enabled, adds 64QAM modulation detection. Added Code Domain identification of channels using 64QAM modulation (Green bars). Trace Type > Code Domain shows all OVSF code channels simultaneously.	X	X	X
Added constellation display for W-CDMA/HSPA measurements.	X	X	X
Added IQ Cache feature (for fast sequence test) to allow the analyzer to perform measurements on data that was previously captured and stored in the analyzer DSP memory. In the UI, see Menu > Global Settings > Advanced > More > IQ Cache. Related SCPI commands: `[:SENSe]:IQCache:DSOurce`, `[:SENSe]:IQCache:ADDRess:INCRement`, and `[:SENSe]:IQCache:ADDRess:STARt`. **NOTE:** Please consult with an Agilent Applications Engineer to utilize this feature.	X	X	X
Added trigger bandwidth adjustment to improve triggering accuracy and predictability.	X	X	X
Added the `:DIAGnostic:INFormation:OPTions` SCPI command to ascertain what options are installed on the instrument.	X	X	X
When using the SCPI Debug feature: Added ability to save displayed SCPI commands to a file.	X	X	X
Added ability for the user to specify user-defined or factory default settings for Preset and power-on. Implemented with SCPI commands (`:SYSTem:PRESet:TYPE` and `:SYSTem:PRESet:SAVE`), and in front panel interface (Menu > Global Settings > Preset Type).	X	X	X
Added ability to set the occupied bandwidth (OBW) threshold for general purpose SEM measurements. See the Channel Settings dialog, and the `[:SENSe]:GPSEM:OBW:THREshold` command.	X	X	X
Added cdma2000 EVM magnitude and phase error capability, via SCPI commands: `:CALCulate:CDMA:REVerse:MERRor:PEAK`, `:CALCulate:CDMA:REVerse:MERRor[:RMS]`, `:CALCulate:GSM:PERRor:LIMit:PEAK`, and `:CALCulate:GSM:PERRor:LIMit:RMS`.	X	X	X

Enhancement	2810	2820	V2820A
Added ability to display user flatness on screen for all measurements. If User Flatness is turned on, '(Offs)' is displayed next to the 'Expected Pwr:' label or below the Ref Level entry box. Clicking on the indicator opens the User Flatness dialog box. Also implemented `[:SENSe]:UFLatness:LOAD` and `[:SENSe]:UFLatness:STATe` commands for video trigger.	X	X	X
Added a sample user flatness file users can modify for their purposes. See Menu > Global Settings > User Flatness… > Data File.	X	X	X
Added two sample channel power list (CPL) files users can modify for their purposes. See Spectrum > General Purpose > Channel Power List.	X	X	X
Added "NONE" as a filter choice for Zero Span, General Purpose ACPR and CPL. This improves measurement processing time. See also: `[:SENSe]:ACPR:BWIDth[:RESolution]:TYPE`, `[:SENSe]:CPList:BWIDth[:RESolution]:TYPE`, and `[:SENSe]:ZSPan:BWIDth[:RESolution]:TYPE`.	X	X	X
Added transition filters (controlled with `NTRansition` and `PTRansition`) for the measurement, operation, and questionable event registers.	X	X	X
Added spur cancellation for WLAN SEM and GP SEM measurements. Added the SCPI commands `[:SENSe]:WLAN:SEMask:SPUR:CANCellation[:STATe]` and `[:SENSe]:GPSEM:SPUR:CANCellation[:STATe]`, respectively.	X	X	X
Added SCPI pass-through support for the Model 2891-IQ Upconvertor. `:MBOX:COMMand` passes commands and queries to a 2891-xx product connected to the VSA, and returns responses.	X	X	X
Added SCPI pass-through support for Model 3500 Power Meter. `:PMETer:COMMand` passes commands and queries to a Model 3500 Power Meter connected to the VSA, and returns responses.	X	X	X
Added SCPI commands to query peak PSD from WLAN SEM: `:CALCulate:WLAN:SEMask:PSD`, `:CALCulate:WCDMa:DOWNlink:SEMask:CPOWer`, `:CALCulate:WCDMa:UPLink:SEMask:CPOWer`, `:CALCulate:CDMA:REVerse:SEMask:CPOWer`.	X	X	X
Additional new SCPI commands implemented in this firmware release: • `:CALCulate:PSK:IQRatio` – queries the I/Q ratio for the current measurement. • `:CALCulate:WCDMa:UPLink:IMARKer:STYPe` – queries the signal type at the I marker. • `:CALCulate:WCDMa:UPLink:QMARKer:STYPe` – queries the signal type at the Q marker. • `:DISPlay:VIEW:WCDMa:UPLink:TYPE` – sets the trace type for WCDMA uplink measurement. • `[:SENSe]:FSK:ORATio` – measures the FSK offset ratio and returns the result. • `[:SENSe]:GSM:CPOWer:AVERage:COUNt` – sets the average count for the channel power.	X	X	X
Enhanced license management user interface features for greater ease of use.	X	X	X
Added documentation to help with any trouble viewing licenses if a user should downgrade to an earlier firmware version. Note that you must first upgrade to the latest version of firmware (available at www.agilent.com/find/V2820A), then revert to the desired, older version using a correctly named .CAB file. That is, *a .CAB file that has not been saved under a different name*.	X	X	X
Added documentation of the process to remove old CAB files to make room on the instrument's Storage Card memory when upgrading the firmware.	X	X	X

Version 5.0 firmware critical fixes

Critical fixes: Symptom	Resolution	2810	2820
PR10362: SCPI commands in help system – some commands are missing and some need correction	Updated the SCPI section of the help system (added missing commands, made corrections as needed). Commands that were missing, now added: • `:ABORt` • `:CALCulate:DATA` • `:DIAGnostic:INFormation:OPTions` • `:DISPlay:VIEW:GSM` • `:DISPlay:VIEW:EDGE` • `[:SENSe]:EDGE:TMASk:LOAD` • `[:SENSe]:EDGE:ORFS:MODulation:FLIMits:LOAD` • `[:SENSe]:EDGE:ORFS:SWITching:FLIMits:LOAD` • `[:SENSe]:GSM:TMASk:LOAD` • `[:SENSe]:GSM:ORFS:MODulation:FLIMits:LOAD` • `[:SENSe]:GSM:ORFS:SWITching:FLIMits:LOAD` • `[:SENSe]:WLAN:SEMask:SIGNal` Corrections made to these commands: • `:CALCulate:CDMA:REVerse:SEMask:CPOWer` • `:CALCulate:EDGE:EVM:DATA` • `:CALCulate:WCDMa:DOWNlink:MARKer:CHANnel` • `:CALCulate:WCDMa:DOWNlink:SEMask:CPower` • `:CALCulate:WCDMa:UPLink:SEMask:CPOWer` • `:DISPlay:VIEW:EDGE:TYPE` • `:MMEMory:DATA` • `[:SENSe]:CPList:COUNt` • `[:SENSe]:EDGE:SLOT:TYPE` • `[:SENSe]:GPSEM:SPUR:CANCellation[:STATe]` • `[:SENSe]:WIMax:EQUalizer` • `[:SENSe]:WIMax:MAP:EDIT:FFTSize` • `[:SENSe]:WLAN:OPTimize` • `[:SENSe]:WLAN:SEMask:SPUR:CANCellation[:STATe]` • All measurement limit related commands: `:CALCulate:<SignalType>:<SignalSubType>:<MeasType>:LIMit:FAIL`	X	X
PR11456: Add documentation to clarify the return data for the `:CALCulate:DATA` command.	Documentation for the `:CALCulate:DATA` command is updated. The amount of return data varies widely, depending on the trace data of a currently active measurement. This command could return a few items, or hundreds of items.	X	X
PR11642: WiMAX 802.16e UL signals fail to demodulate when FFT set to 128 and Guard Interval at 1/32.	Created a new algorithm to ensure demodulation.	X	X
PR11689: Receive -222, "Data Out Of Range" error from the following SCPI command: `[:SENSe]:WIMax:MAP:EDIT:DOWNlink:SBURst`	Corrected the behavior of the DEFault parameter on the downlink and uplink commands for selecting a burst.	X	X
PR11700: Frequency reference info is invalid when internal clock is disabled (MIMO).	When in MIMO mode, the Ref indicator in the lower-right corner of the instrument screen displays "MIMO".		X

Critical fixes: Symptom	Resolution	2810	2820
PR11710: Using general purpose SEM, the trigger timeout and trigger measurement mode do not function correctly across multiple sub-measurements.	Trigger timeout and measurement now function predictably.	**X**	**X**
PR11725: Using zero span, experience unexpected measurement results when adjusting trigger delay.	Trigger delay modified to accept more than just even-numbered settings.	**X**	**X**
PR11787: Using general purpose SEM the limit setting does not recognize when you change it to dBc (always uses dBm).	Corrected the limit control to correctly switch between dBc and dBm.	**X**	**X**
PR11875: Green trigger level should not be drawn when the y-axis is frequency units.	Green trigger level is no longer drawn when the y-axis is frequency units.	**X**	**X**
PR11876: When the y-axis is frequency the reference level entry box points to the top of the screen.	When the y-axis is frequency the reference level entry box points to the middle of the screen.	**X**	**X**
PR11889: The overload warning does not automatically clear when you adjust the reference level/expected power.	Corrected so that when you adjust the reference level/expected power to the point at which there is no longer an overload, the warning is dismissed.	**X**	**X**
PR11906: When you adjust the center frequency for general purpose measurements, the display panning capability does not work in the zero-span measurement (trace type = frequency).	The panning capability now works during this measurement. The trace moves up and down as you change center frequency.	**X**	**X**
PR12050: External reference lock is not stable from sweep to sweep in continuous sweep mode.	External reference lock now stable.	**X**	**X**
PR12150: Reference level does not reflect user flatness.	User flatness offset is not included in calculating the adjusted reference level. See details on page 14.	**X**	**X**
PR12226: If you save the state (menu > Save Setup) when making a zero span measurement and the trace type is frequency, the scale/div is not restored correctly when the sate is restored (Menu > Open Setup).	Scale/div is now properly recalled when you restore the setup.	**X**	**X**
PR12358: WCDMA downlink with HSDPA enabled intermittently measures high EVM and PCDE values on a Test Model 3 signal.	Now measures appropriate EVM and PCDE values with a Test Model 3 signal.	**X**	**X**
PR12371: Green 'trigger adjust' line is not present on GPSEM displays.	Added trigger cursor to the GP SEM measurement.	**X**	**X**
PR12453: GSM ORFS measurement produces corrupt data when noise correction is off.	GSM ORFS now measures appropriately with noise correction off.	**X**	**X**
PR12475: ARB sequence file resets when loading a new user flatness file.	Reset no longer occurs. Maximum number of rows in the user flatness table has been increased from 10 to 20.	**X**	**X**
PR12693: LXI web interface to the product does not work current version of the Java Runtime Environment (JRE) available at www.agilent.com/find/V2820A.	New instructions for installing the new JRE are provided on the display. The new JRE is available on the product CD, and from the product web page at www.agilent.com/find/V2820A.	**X**	**X**
PR12697: When trying to remove a license with a dependency the error message is cut off.	Increased size of message box to see the complete error message.	**X**	**X**
PR12704: Green video trigger cursor does not display for GP SEM measurements.	Trigger cursor now displays for GP SEM measurements.	**X**	**X**

Critical fixes: Symptom	Resolution	2810	2820
PR12768: When attempting use a SCPI command that references a measurement that does not have a measurement license enabled, the error message "Parameter Error" is sent. "Parameter Error" does not fully indicate the root nature of the problem.	Added a new error message for this condition: "The required license is not installed" (SCPI Error number 13).	X	X
PR12775: Corrupt data appears at the start of a sweep in zero span when MIMO Sync is enabled with free-run trigger.	Corrected and now displays uncorrupted data.		X

Series V2800 Desktop Control Panel

NOTE: This feature is presently available only for the V2820A instrument.

The Series V2800 Desktop Control Panel is a software application you install on your PC. It provides full control of your Series V2800 vector signal analyzer from the convenience of your PC – set the parameters for a measurement, analyze the waveform, view the results on your PC, etc. Using Desktop Control Panel, you have the same control of the instrument as you would by using the instrument's touch screen user interface. Likewise, you have the same remote control capability with SCPI interface.

The Desktop Control Panel software communicates to the instrument over the high-speed USB interface. While the Desktop Control Panel software is running the following are disabled on the instrument: touch screen interface, LXI web interface, digital I/O on the instrument back panel, Preset and Local buttons and knob and puck on the instrument front panel, and communication with the instrument over GPIB, USB, and LAN at the instrument's IP address (communication via LAN [socket only] at the PC's IP address is still supported). When you exit the Desktop Control Panel program the above items are re-enabled, and the instrument performs a system preset (:SYSTem:PRESet).

The Desktop Control Panel software may be installed from the Series V2800 CD-ROM, or from the Series V2800 product web page at www.agilent.com/find/V2820A. Installation instructions are provided in the *Agilent V2820A Installation and Quick Start Guide*, and in the instrument help system.

For additional detail on using the Desktop Control Panel, refer to the "Controlling the Instrument via Desktop Control Panel" section in the instrument help system.

Version 4.2 firmware release overview

The Series V2800 Vector Signal Analyzer version 4.2 release includes the resolution of three firmware concerns. Additionally, version 4.2 introduces four new firmware enhancements.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 4.0
Recalibration required	No
Requalification suggested	No

Version 4.2 firmware enhancements

| Enhancement	2810	2820
Added an occupied bandwidth (OBW) measurement to the general-purpose spectrum emission mask (GP SEM).	X	X
GPSEM now supports peak spectral density (PSD) relative measurements in addition to channel power relative measurements for IEEE Std. 802.11 compliance.	X	X
Added Model 28910 support.	X	X
Added the command, [SENSe]:GPSEM:SPUR:CANCellation[:STATe] and the user interface setting, General Purpose > SEM > Spur Cancellation On Off.	X	X

Version 4.2 firmware critical fixes

Critical fixes: Symptom	Resolution	2810	2820
PR12150: Need to be able to set the reference level to >40 dB.	Refer to *Reference Level and Expected Power Fields with User Flatness Enabled* description located below this table.	X	X
PR12026: Measurement markers are not on the trace.	Changed the way markers are set on the traces that have a vector of x values.	X	X
PR11889: Overload warning does not automatically clear when the reference or power level is adjusted.	Overload message is now cleared when a reference or power level adjustment removes the overload condition.	X	X

Reference Level and Expected Power Fields with User Flatness Enabled

Starting with version 4.2 the Reference Level and Expected Power values in the Series V2800 measurements will be offset by the values in the User Flatness table when user flatness is enabled. This feature will allow the correct setup and display of signals with offset values in the user flatness table.

The following diagram is an example showing the impact of this change:
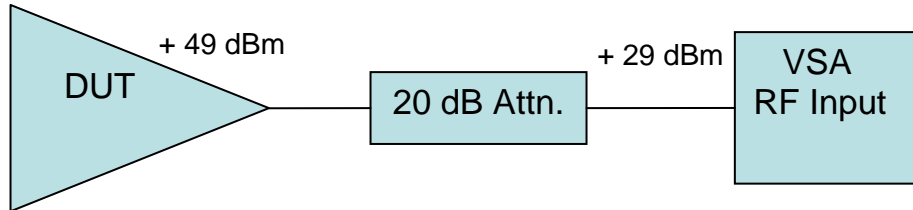
For the above test condition, a value of 20 dB should be entered in the user flatness table. he user flatness table allows up to 10 different values to be used across a range of frequencies. The frequency response of the attenuator and cables can be entered at 1 or more frequencies. When the user flatness correction is turned on, the reference level or expected power field on the Series V2800 measurement should be set to the actual output level of the device under test (DUT), + 49 dBm in this example. The measurement display will have a top value of + 49 dBm, allowing the complete signal to be visible. The Series V2800 input attenuation will be set for the actual value at the analyzer input, + 29 dBm in this example, to allow for maximum dynamic range in the measurement. The data values and trace will reflect the values at the DUT output by adding the value of the user flatness to the actual measured values.

Care should be taken to insure that power levels above the maximum rated input power are not input to the analyzer when testing high power amplifiers (as in the example above).

Version 4.1 firmware release overview

The Series V2800 Vector Signal Analyzer version 4.1 release includes the resolution of two firmware concerns. Additionally, version 4.1 introduces a new firmware diagnostic enhancement.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 4.0
Recalibration required	No
Requalification suggested	No

Version 4.1 firmware enhancements

Enhancement	2810	2820
Added the option of writing SCPI debug data to a file. That text file (logging queries and/or errors) can be saved to the instrument or to a connected USB memory device.	X	X
Added the capability for the instrument to power on when AC power is applied to the rear panel. The front panel power-on sequence may be disabled in the Global Settings menu.		X

Version 4.1 firmware critical fixes

Critical fixes: Symptom	Resolution	2810	2820
PR12050: External reference has jitter from sweep to sweep in continuous mode.	Firmware code was modified to shorten locking out time of interrupts.	X	X
PR11867: Downloading large channel power list files from a USB device could cause a crash.	A longer timeout period was added to download files from slower media.	X	X
PR11787: In the general-purpose Spectrum Emission Mask measurement, the dBm/dBc control is inoperative.	Firmware code was modified to allow dBc, as well as dBm setting.	X	X
PR11786: Changing expected power during WiMAX demodulation caused measurement failure.	Firmware code was altered to allow adjustments in expected power.	X	X

Version 4.0 firmware release overview

The Series V2800 Vector Signal Analyzer version 4.0 firmware includes the addition of new measurements:

- WiMAX demodulation
- EDGE 2.0 demodulation
- General-purpose digital demodulation

Existing measurement suites have been enhanced with the following capabilities:

- Spectrum emission mask capability has been added to general-purpose measurements.
- WLAN (802.11x) measurements have enabled 40 ms burst length and separation of AM to PM (amplitude modulation to phase modulation) and phase distortion.
- HSDPA (high speed downlink packet access) has been added to W-CDMA downlink.
- Origin offset capability has been added to GSM measurements.
- Frequency trace type and video filter settings have been added to general-purpose zero span measurements.

Traditional and simplified Chinese language have been removed from the GUI and online help.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 2.11
Recalibration required	No
Requalification suggested	No

Version 4.0 firmware enhancements

Enhancement	2810	2820
Added general-purpose digital demodulation capability (FSK and PSK)	X	X
Added EDGE 2.0 measurement capability	X	X
Added general-purpose spectrum emission mask capability	X	X
Added WLAN (802.11x) measurement enhancements: Separated AM to PM and phase distortion, enabled up to 40 ms burst length	X	X
Enhanced W-CDMA downlink with the addition of HSDPA	X	X
Added WiMAX demodulation measurements	X	X
Added GSM origin offset	X	X
Added zero span frequency trace type and video filter setting	X	X

Version 4.0 firmware critical fixes

Critical fixes: Symptom	Resolution	2810	2820
PR11250: Some SCPI commands do not accept DEF | MIN | MAX.	All SCPI commands that should accept DEF | MIN | MAX now do so.	X	X
PR11076: The 802.11j spectrum emission mask does not change relative to signal level.	The format is changed to a relative mask. The relative mask is also used with the 802.11a/g signal types.	X	X
PR10628: Receiver software licensing needs to adopt same strategy as sources (2800 as opposed to 2810/2820).	Licensing nomenclature modified to adopt the same series (not model) prefix as sources. Existing Model 2810 and Model 2820 licenses are still recognized.	X	X
PR10471: IF overload error does not display in LXI interface as it appears on the front panel display.	IF overload error is now displayed when using the LXI interface.	X	X
PR10081: LXI interface does not update the status of the external reference (locked or not locked).	Frequency reference state is now correctly displayed.	X	X
PR10077: Preset does not load GSM/EDGE default time mask limits data if time mask limits window is open when Preset is activated.	Time limits data now defaults correctly.	X	X

Version 2.11 firmware release overview

The Series V2800 Vector Signal Analyzer version 2.11 firmware includes resolution of three firmware concerns.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 2.1
Recalibration required	No
Requalification suggested	No

Version 2.11 firmware critical fixes

Critical fixes - Symptom	Resolution	2810	2820
PR10860: On certain units and at certain temperatures, communication to the RF front-end board failed, causing the tracking generator and certain calibration functions to operate incorrectly.	Data bus timing was modified to move the changing of the data on the bus 20 ns away from the negative edge. This provides enough time to properly latch the data.		X
PR10866: Installation of a new .CAB file sometimes fails to unzip the English Help.	A boot file update has been added to .CAB file installation process.	X	X
PR10867: The instrument boot-up dialog does not work properly for Windows® CE 4 operating system reinstallation.	A modification has been made to the reinstallation process to correct this problem.	X	X

Version 2.1 firmware release overview

The Series V2800 Vector Signal Analyzer version 2.1 firmware includes support for Model 280111 MIMO Signal Analysis Software. A phase control function is also included in the firmware upgrade. The Model 2820 extended frequency range is set at 6.5 GHz.

Upgrade considerations for Series V2800 Vector Signal Analyzer

Consideration	From version 2.0
Recalibration required	No
Requalification suggested	No

Version 2.1 firmware enhancements

Enhancement	2810	2820
Added support of Model 280111 MIMO Signal Analysis Software		X
Added phase control function: Select **Menu > Global Settings > Carrier Phase**		X
Model 2820 extended frequency is now set at 6.5 GHz		X

Version 2.1 firmware critical fixes

Critical fixes - Symptom	Resolution	2810	2820
PR10707: Use a Series 2900 source: Start GSM, load an arbitrary waveform file and vary the sample rate. Trigger the Series V2800 VSA externally with the sync out on wrap signal from the source. At high sample rates, prior to time = 0, the trace moves to the left on the display.	Corrected undesired variation in zero span trigger delay. Signal no longer moves prior to time = 0 at any of the available sample rates.	X	X
PR10706: Maximum frequency available for zero span was the maximum setting available for the spectrum measurement, not the maximum frequency of the instrument.	Zero span can now tune to the full range of the VSA; no longer limited to the spectrum measurement range.	X	X
PR10702: Zero span sweep-to-sweep trigger jitter performance was typically 40 ns as maximum sample rate was approached.	Zero span sweep-to-sweep trigger jitter performance has been improved to typically 10 ns.	X	X
PR10676: Special FSK: Grayed filter choice was Gaussian.	Special FSK: Grayed filter choice has been changed to NRZ Gauss.	X	X
PR10556: The acquisition interval was limited to a maximum of 1.0 second.	The acquisition interval has been extended to a maximum of 30.0 seconds.	X	X
PR10559: The trigger timeout was limited to a maximum of 1.0 second.	The trigger timeout has been extended to a maximum of 30.0 seconds.	X	X
PR10502: The device clear command did not terminate "read data" before `:MEAS:IQ?` query.	The device clear command now works correctly for `:MEAS:IQ?`, and no data is read.	X	X

Version 2.0 firmware release overview

The Series V2800 Vector Signal Analyzer version 2.0 firmware includes the capability to analyze W-CDMA downlink and WLAN OFDM signals. LXI enhancements and Chinese versions of the user interface are also included in the firmware upgrade.

Upgrade considerations for Series V2800 Vector Signal Analyzer:

	Consideration
Recalibration required	No
Requalification suggested	No

Version 2.0 firmware enhancements

Enhancement	2810	2820
Added the ability to analyze W-CDMA downlink signals.	X	X
Added the ability to analyze WLAN OFDM signals.	X	X
Added the choice of languages for the user interface: Simplified Chinese, Traditional Chinese, or English.	X	X
Added the bus trigger in point mode for channel power list.	X	X
If a :MEAS:IQ? command is sent without reading all the data, either sending a Device Clear command over GPIB or pressing the front-panel **Local** key will now abort the command.	X	X
Added the following aliases for channel power list: \USER FLATNESS\USER and \LIST\USER.	X	X
The SCPI command error messages Help topic can now be accessed from the remote control icon on the Model 2810 Help home page.	X	X
Added the return parameters in the Help topics for the applicable SCPI commands.	X	X
Added the :SOUT:IMM command and the "Pulse Sync Out" button on the Sync Output panel.	X	X
Added a new trigger source: :TRIGger:SOURce BUS. In this triggering mode, sending *TRG causes the instrument to trigger.	X	X
Added the following triggers for EDGE / GSM measurements: Video, External, Bus, External Arm/Video, Bus Arm/External, Bus Arm/Video, and External.	X	X
Added controls in the Frequency Reference settings dialog box that can be accessed by selecting: **Menu > Global > Frequency Reference**. Even Second In has In Polarity and Out Polarity selections for Rising and Falling options.	X	X
Added information in the Help that states the maximum number of channels (data rows) that is supported in the channel power list (501).	X	X
Added a Pulse Sync Out button to the user interface, and added information in the Help describing the associated operation.	X	X
Added information in the Help describing the method to create a user flatness file.	X	X
Added information in the Help describing the SCPI command error messages for the user flatness list feature.	X	X
Added BUS and EXT latched trigger functionality.	X	X
Added the ability to support VXI-11 and raw socket interfaces for remote LAN control. Class C compliance is achieved with this enhancement.	X	X

Enhancement	2810	2820
Added the feature (user flatness) where a user can open or create an amplitude-level offset file that compensates for path losses.	X	X
Added a Ref Level and a Preamp column to the channel power list so that those two parameters can be user-controlled, rather than reverting to default values.	X	X

Version 2.0 firmware critical fixes

Critical fixes - Symptom	Resolution	2810	2820
PR10506: SCPI query of the event register did not respond as expected.	The proper setting now automatically happens for ext ref present/locked and overload bits in the measurement condition register.	X	X
PR10479: IF overload error was not available in the status register.	The event registers now follow the IEEE standard. The measurement condition register dynamically follows instrument conditions. The Help topic for Remote Control > Status Structure > Measurement Event Register was edited to reflect the new operation.	X	X
PR10439: The Java Runtime message that states a newer version of Java is needed for correct operation is delayed for some time (30 seconds to 10 minutes, depending on network traffic).	The LXI application works as defined with Internet Explorer functionality. The Help explains that a specific version of J2SE™ Runtime Environment is required for the setup of LXI.	X	X
PR10434: In General Purpose ACPR > Trigger-mode > On Measurement-Acquisition Interval, the 1 second interval setting was 30 seconds.	The maximum value for Acquisition Interval is changed to 1.0 seconds.	X	X
PR10427: Cannot upload the Chinese version of the .CAB file during the software upgrade over LXI.	The upload limit is increased from 20 MB to 40 MB. The Help states that an upgrade from 1.x to 2.0 requires a flash drive and describes how to find out which software version is currently installed.	X	X
PR10404: The `:MMEM:CATalog?` SCPI command generates a "missing parameter" error, and there is no documentation for how the command is supposed to work.	The function LoadScpiFilePath, is now called at startup so the parameters work. The Help now lists the choices for the parameter: `SETUPS	USB	USB2	USB3	USER	CPL\USER	USER FLATNESS\USER.`	X	X
PR10399: The optimize setup feature does not automatically detect some key settings (for example, trigger delay) needed to demodulate a WLAN signal.	The optimize setup feature is primarily intended to optimize measurement throughput. Therefore, several key settings in the instrument (besides the trigger settings listed) are not modified when this feature is enabled.	X	X
PR10323: There is no link in the Help to information on how to reset the LXI user name / password.	A link is now in place in the LAN Config Init Help topic in the Utilities menu.	X	X
PR10317: There are inconsistencies in the command syntax for the measurement limit related commands.	Added the new SCPI commands in the form recommended for consistency. The old forms are retained for backward compatibility.	X	X
PR10275: The `:SENSe:CPList:LOAD` query form is documented incorrectly in the Help.	Corrected the command topic in Help.	X	X
PR10274: The documentation incorrectly shows the SCPI query returns a Boolean value. These commands take and return `OFF	TRAC	FPO`, not binary.	The documentation was corrected.	X	X
PR10233: Downgrading to 1.1 release code looses the option licenses.	The code was modified so it will not abort the processing of the license file when an unknown	X	X

Critical fixes - Symptom	Resolution	2810	2820
	license is found.		
PR10205: The VXI-11 discovery puts the instruments into remote mode.	The VXI-11 discovery now puts the instrument into local mode.	X	X
PR10199: The W-CDMA downlink IQ offset varies significantly when the SCH burst is present.	Avoid the SCH burst for best measurement results.	X	X
PR10189: Cannot extract a 40 MHz IQ trace. The operation is limited to 35 MHz in MeasIQ.	The Max BW limit is changed from 35 MHz to 40 MHz for zero span and ACPR.	X	X
PR10180: The LXI authentication process does not meet the standard set for Models 2810 and 2910.	The controls on the virtual front panel (for example, frequency and amplitude) now require the user to enter authentication (default: admin/admin). The user may alter the security level on the admin web page so the password is not required for the instrument settings (level = low) or never required (level = disabled).	X	X
PR10171: The spur cancellation lower limit is wrong (700 MHz should be 825 MHz).	The lower frequency limit is changed from 700 MHz to 825 MHz.	X	X
PR10090: There is no remote control support for the external latching trigger mode	A new trigger source was added: `:TRIGger:SOURce ELAT`.		
PR10089: The acquisition interval does not operate globally.	Added the acquisition interval control to the trigger panel. A new Mode tab that contains Trigger Mode and Acquisition Interval has been added. The tab formerly named "Advanced" is now named "Video." The two controls are grouped together because Mode affects whether Acquisition Interval is active or grayed out.	X	X
PR10088: The trigger controls do not operate globally.	Trigger controls now operate globally.	X	X
PR10068: The time/date in the HTTP header is invalid; the day of the week is off by one day in the LXI web-page.	Corrected the time/date display.	X	X
PR10006: There is no information available in the Help for the scaling feature that is available with the `:MEAS:IQ?` query.	In zero span and single sweep mode, the command `MEAS:IQ?` returns the IQ data. The command `:MEAS:IQ:CFACtor?` returns the cal factor for the data.	X	X
PR10005: There is no Sync Out functionality for "Ready Acquire" and "Start Acquire."	"Ready Acquire" becomes a "trigger armed" indicator and "Start Acquire" becomes a "trigger has occurred" indicator. This required FPGA and DSP code changes only.	X	X
PR10001: The command `:CALC:DATA?` Does not work when there is no video trigger.	Pressing the front panel **Local** key or sending a Device Clear command (GPIB) will now abort the command.	X	X

Firmware installation process

Use one of the following procedures to upgrade the instrument's firmware.

> **NOTE**: Be certain you are downloading and installing the correct firmware for your instrument. There are two types of installation files available:
>
> 1. Firmware files for the Agilent Series V2800 VSAs (with a .cab file extension)
>
> -or-
>
> 2. Software files for the Desktop Control Panel application installed on a PC
>   (with a .exe file extension). To install the Desktop Control Panel, refer to the installation
>   instructions in the *V2820A Installation and Quick Start Guide*.
>
> If you attempt to install the wrong file type, an error is displayed and the installation procedure aborts.

Firmware installation using the front panel interface:

1. On your PC, launch a web browser and download the latest firmware upgrade file from the www.agilent.com/find/V2820A website.
2. Save the file to a location that you can access from the instrument.

    NOTE: A USB memory device is convenient for this purpose, as you can then use it to transfer the file to the instrument.
3. Select **Menu > Utilities > Upgrade Firmware**.
4. Navigate to the location of the upgrade file that you just downloaded and saved.
5. Select (highlight) the file and select **Open**.
6. Follow the on-screen prompts to complete the installation.

## Firmware installation using the LXI web interface:

Although you can upgrade the instrument firmware from the LXI web interface, you will not be able to detect the progress of the upgrade. You may want to upload the upgrade file to the instrument, and then run the upgrade process locally.

1. Connect the instrument to a web network that includes your computer.
2. On the computer, launch a web browser and download the latest firmware upgrade file from the www.agilent.com/find/V2820A website. Save it to a directory on the computer.
3. In the web browser, use the instrument IP address as the URL.

    - If you do not know the instrument IP address, select **Menu > Utilities > Ethernet Settings** from the instrument front panel.
4. Click **Instrument** on the web page. The virtual front panel is shown.
5. Click **Menu > Utilities > Upgrade Firmware**.
6. You may need to type the username / password (default is admin / admin) to proceed.
7. Click **Browse** and navigate to the location of the file that you just downloaded from www.agilent.com/find/V2820A.
8. Click **Upload**. This copies the file to the instrument firmware upgrade directory.
9. Click **Start Upgrade** and then click the file that you uploaded to the instrument.
10. Click **Load**.
11. Follow the prompts to complete the installation.

Making room on the instrument's Storage Card

If, in the process of upgrading the firmware, you receive a message that the Storage Card (the instrument's internal memory) is full, use one of the following procedures to remove old .cab (firmware installer) files:

Using the Select Upgrade File dialog
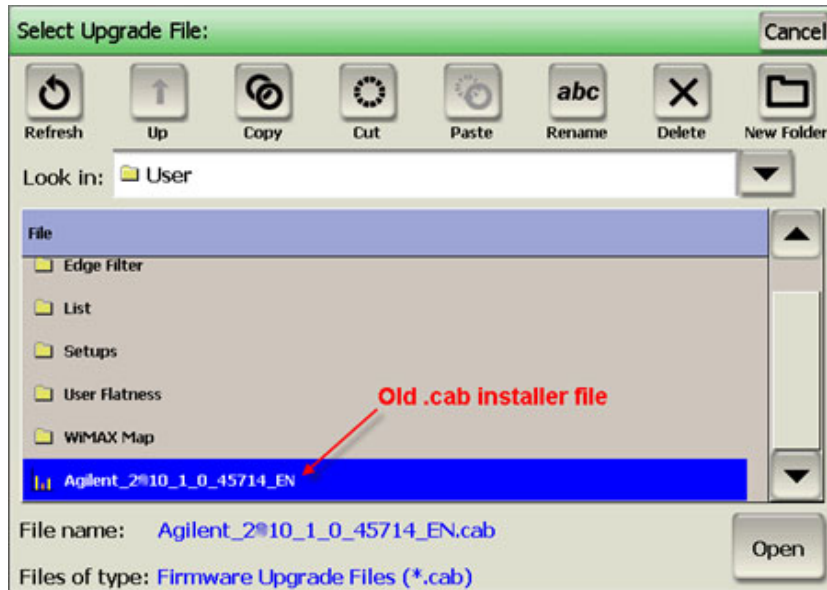
1. While in the Select Upgrade File dialog, make sure that "User" is the selected **Look In** directory.

2. In the **File** list, scroll to the bottom of the list to see the old .cab files.

   NOTE: Any .cab files listed in the **File** list are old installer files. Deleting them will not affect the instrument's operation with the present firmware installation.

3. Select an old .cab file and press the **Delete** button in the dialog's upper toolbar.

4. Repeat Step 3 for each old .cab file.

Using SCPI commands

1. Use the `:MMEMory:CATalog?` command to ascertain what old .cab files existing on the Storage Card.

2. Use the `:MMEMory:DELete` command to delete the old .cab files.