

HP8920 Mode on the M8920A

HP8920A to M8920A SCPI Compatibility Mode - **BETA Release**

The M8920A PXIe Radio Test Set can be used to replace legacy HP8920 RF Communication Test Sets in an automated test environment with minimal or no modification to the currently used measurement software.



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HP8920 Mode Description

HP8920 Mode is a Remote Language Compatibility application for Keysight Technologies M8920A Radio Test Set. It allows the M8920A to be controlled using many SCPI remote programming commands originally intended for the HP8920A/B RF Communications Test Set.

The M8920A Radio Test Set with HP8920 Mode installed can replace the HP8920A/B Communications Test Set in many automated systems with minimal or no modification to the existing measurement software.

Handling of Unsupported Commands and Queries

If a command is valid for the legacy HP8920 products but not supported by the HP8920 Mode in the M8920A, no error message is generated, and no action is taken by the M8920A although a "Undefined Header" comment is returned as a header error.



HP8920 Compatibility Mode

Run legacy programming codes using newer SCPI-based instruments without code modification

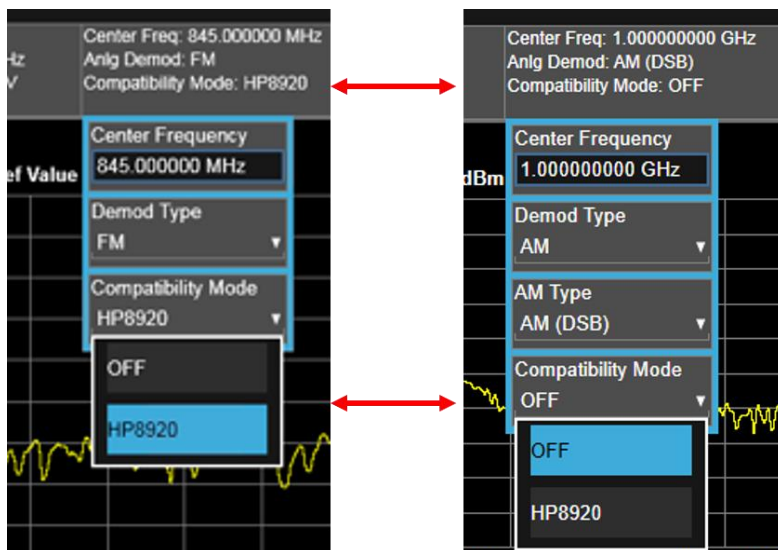
Reduce ATE system investment with M8920A PXIe Radio Test Set

Remote Control

HP8920 Mode in the M8920A supports normal M8920A PXIe remote SCPI interface operation via TCP/IP/LAN: SICL, Telnet, Socket, and HiSlip.

Compatibility Mode selection: OFF|HP8920

On the M8920A the Compatibility Mode can be seen in the Measurement Bar at the top of the Screen as shown below. The HP8920 Compatibility Mode can only be changed programmatically, to turn it on use command: :SYSTem:LANGuage HP8920 ; to turn Compatibility Mode off: SYST:LANG OFF.



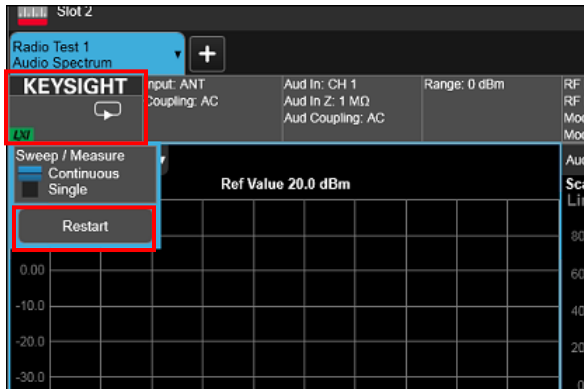
Supported Commands

HP8920 Mode supports a subset of HP8920A/B RF Communications Test Set commands. The list of supported commands was determined by feedback from customers, combined with technical considerations and constraints. Device Clear is supported by HP8920 Mode and causes a mode preset of the M8920A Radio Test Set.

When the HP8920 Command mode is selected the M8920A will interpret the incoming command as the XSA SCPI Command(s) listed here:

*Note: Many HP8920 commands are translated into multiple XSA commands. Depending on the mode and enabled settings, some XSA commands will not be run as they are either redundant or unnecessary.

If you are having trouble sending HP8920 SCPI commands, try pressing “restart.”



HP8920 SCPI commands	XSA (M8920A) SCPI
AFGenerator	
:AFGenerator[1][2]:DEST <'AM' 'FM' 'Audio Out'>	:SOURCE:MODulation:TYPE ANALog :SOURCE:MODulation:ANALog:FORMat AM FM :AFGenerator[1][2]:MODE FGEnerator :AFGenerator[1][2]:OUTPut ON OFF 1 0
:AFGenerator[1][2]:AM <value>	:SOURCE:AM:DEPTH
:AFGenerator[1][2]:FM <value>	:SOURCE:FM:DEVIation
:AFGenerator[1][2]:OUTP <value>	:AFGenerator[1][2]:AMPLitude <level>
:AFGenerator[1][2]:FREQ <value>	:AFGenerator[1][2]:FREQUency <freq> :SOURCE:AM:INTernal:FREQUency :SOURCE:FM:INTernal:FREQUency
:AFGenerator[1][2]:MODE FGEnerator	:AFGenerator[1][2]:MODE FGEnerator

CALCulate	
:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:CONTRol:DATA <real>, <real>, ...	:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:X:DATA <real>, <real>, ...
:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:CONTRol:POINts?	:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:X:POINts?
:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:UPPer:DATA <real>, <real>, ...	:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:Y:UPPer:DATA <real>, <real>, ...
:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:LOWer:DATA <real>, <real>, ...	:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:Y:LOWer:DATA <real>, <real>, ...
:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:UPPer:POINts?	:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:Y:UPPer:POINts?
:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:LOWer:POINts?	:CALCulate:DDEMod:LLINe[1] 2 3 4 5 6:Y:LOWer:POINts?

HP8920 SCPI commands	XSA (M8920A) SCPI
RFGenerator	
:RFGenerator:AMPLitude <value>	:SOURce:POWer:LEVel:IMMediate:AMPLitude <amp>
:RFGenerator:FREQuency <value>	:SOURce:FREQuency:CW <freq>
:RFGenerator:OUTPut <'RF Out' 'DUPLEX'>	:SENSe:FEED:RF:PORT:OUTPut RFOut RFIO1 RFIO2 :SENSe:FEED:RF:PORT:OUTPut RFOut GENerator TR RFHD
AFANalyzer	
:AFANalyzer:AIN <'Gnd' 'Float' '600 To Hi'>	:SENSe:AFINput[1] 2:LOW FLOat GROund :SENSe:AFINput[1] 2:IMPedance 50 600 1000000 Gnd => GROund, 1000000 Float => FLOat, 1000000 600 To Hi => FLOat, 600
:AFANalyzer:INPut <'FM Demod' 'AM Demod' 'SSB Demod' 'Audio In'>	:SOURce:MODulation:ANALog:FORMat AM FM PM OFF :SOURce:MODulation:ANALog:AM:TYPE AM LSSB USSB
:AFANalyzer:FILTer1 <20Hz HPF 50Hz HPF 300Hz HPF	:SENSe:AFANalyzer:HPFilter OFF HPF20 HPF50 HPF300 HPF400 :SENSe:ADEMod:HPFiler OFF HPF20 HPF50 HPF300 HPF400
:AFANalyzer:FILTer2 <300Hz LPF 3kHz LPF 15kHz LPF >99kHz LPF	:SENSe:ADEMod:LPFilter OFF LPF300 LPF3K LPF15K :SENSe:AFANalyzer:LPFilter OFF LPF300 LPF3K LPF15K
:AFANalyzer:DEMPHasis Off 750 uS	:SENSe:ADEMod:DEEMphasis OFF US750

:AFANalyzer:DETECTOR RMS PK+ PK- PK+-/2	:DISPlay:AFANalyzer:METRics:MMAGnitude ALL PPK PNPK RMS :DISPlay:ADEMod:VIEW:METRics:MMAGnitude ALL PPK PNPK RMS
:AFANalyzer:DETECTOR:PKLocation Filters De-Emp {Please note: this command will return "Undefined Header" because it is not mapped to a command in the M8920A}	This is not mapped to any functionality. By default, M8920A peak location is always set at De-Emphasis filter.
:AFANalyzer:DETECTOR:SETTLing Fast Slow {Please note: this command will return "Undefined Header" because it is not mapped to a command in the M8920A}	This is not mapped to any functionality. User can use Auto BW to set the settling to automatically.

HP8920 SCPI commands	XSA (M8920A) SCPI
MEASure	
:MEASure:AFRequency:DISTortion :MEASure:AFRequency:SINAD :MEASure:AFRequency:CURREnt* :MEASure:AFRequency:SNR :MEASure:AFRequency:FREQuency :MEASure:AFRequency:DCVolts* :MEASure:AFRequency:ACLevel *{Please note: this command will return "Undefined Header" because it is not mapped to a command in the M8920A}	<p>If the :AFAN:INPut = Audio In, then this will return the results from AFAN metrics. Otherwise, by default, Analog Demod results are returned.</p> <p>For DCVolts and Current, or any other value that is not defined, invalid value of "-999" will be returned.</p> <p><u>Analog Demod Analysis:</u> :FETCh:ADEMod[n]? <ul style="list-style-type: none"> • DISTortion; n=1, #6 result • SINAD; n=1, #5 result • CURREnt (NA) • SNR; n=1, #16 result • FREQuency; n=1, #1 result • DCVolts (NA) • ACLevel; n=1, #10 result </p> <p><u>Audio Analysis:</u> :FETCh:AFANalyzer[n]? <ul style="list-style-type: none"> • ACLevel (8) • DISTortion; n=1, #3 result • FREQuency; n=1, #1 result • SINAD; n=1, #5 result • SNR; n=1, #2 result :FETCh:ADEMod[n]? <ul style="list-style-type: none"> • AM => AM:Depth; n=1, #8-15 results • FM => FM:Dev; n=1, #8-15 results </p>
:MEASure:RFRequency:POWER?	:FETCh:ADEMod[n]?; n=1, #2 result

:MEASure:RFREquency:FREQ:ERRor?	:FETCh:ADEMod[n]? <ul style="list-style-type: none"> • AM (N/A) 0 • FM/PM; n=1, #3 result
:MEASure:AFREquency:ACLevel? :MEASure:AFREquency:AM? :MEASure:AFREquency:FM? :MEASure:AFREquency:DISToRTion? :MEASure:AFREquency:FREQuency? :MEASure:AFREquency:SINAD? :MEASure:AFREquency:SNR? :MEASure:AFREquency:ERRor?	:FETCh:AFANalyzer[n]? While n = 1, 15 values are returned: <ol style="list-style-type: none"> 1. Audio Frequency 2. SNR 3. Distortion/Total VMS (% or dB) 4. Total Harmonic Distortion (% or dB) 5. SINAD value 6. Audio Level (Peak+) 7. Audio Level (Peak-) 8. Audio Level (Pk-Pk)/2 9. Audio Level (RMS) 10. Audio Level (Watts) 11. Audio Level (Peak+) Max Hold 12. Audio Level (Peak-) Max Hold 13. Audio Level (Pk-Pk)/2 Max Hold 14. Audio Level (RMS) Max Hold 15. Audio Level (Watts) Max Hold Different values of n return different arrays of information ACLevel: n=1 -> #8 AM Depth => :FETCh:ADEMod[n]?; n=1, #8-15 results FM Dev => :FETCh:ADEMod[n]?; n=1, #8-15 results DISToRTion: n=1 -> #4 FREQuency: n=1 -> #1 SINAD: n=1 -> #5 SNR: n=1 -> #2 ERR =>:FETCh:ADEMod[n]?; n=1, #3 result
DISPlay	
:Disp 'AFANalyzer'	:DISP:RTES:VIEW AD23
:DISP 'CONFigure'	:DISP:RTES:VIEW AD23
:DISP 'RFGen'	:DISP:RTES:VIEW AD23
:DISP 'RFANalyzer'	:DISP:RTES:VIEW AD23
TRIGger	
:TRIGger:IMMediate	:INIT:IMM

Programming Examples

HP8920 TX Test

HP8920 Command	M8920A Interpretation
:DISPlay TX	:DISP:RTES:VIEW ATX
:RFANalyzer:INPut "RF In"	:SENSe:FEED:RF:PORT:INPut TR
:RFANalyzer:FREQuency 452.125E6	:FREQuency:CENTer 452.125E6
:RFANalyzer:PMESurement:DETector "Peak"	:SENSe:DETector:TRACe1 QPEak
:RFANalyzer:IFBW?	:SENSe:ADEMod:BANDwidth:CHANnel?
:RFANalyzer:ATTenuator:MODE "Auto"	No command. Attenuator Mode always "Auto"
:AFGenerator1:DESTination "FM"	:SOURce:MODulation:ANALog:FORMat FM
:AFGenerator1:DESTination "Audio Out"	:SOURce:MODulation:TYPE ANALog
:AFGenerator1:OUTPut 10E-3	:AFGenerator[1]]2:AMPLitude 10E-3
:AFGenerator1:FREQuency 1000	:AFGenerator1:FREQuency 1000
:AFANalyzer:INPut "FM Demod"	:SOURce:MODulation:ANALog:FORMat FM
//Wait 5000ms	Wait statement not needed
:RFANalyzer:ATTenuator?	:SENSe:POWer:RF:RANGe?
:TRIGger:IMMEDIATE	:INIT:IMM
:MEASure:AFRequency:FM?	:FETCh:ADEMod1?
:MEASure:AFRequency:FREQuency?	//Returned in :FETCh:ADEMod1?
:MEASure:RFRequency:POWer?	//Returned in :FETCh:ADEMod1?
:MEASure:RFRequency:FREQuency:ERRor?	//Returned in :FETCh:ADEMod1?

HP8920 RX Test

HP8920 Command	M8920A Interpretation
:DISPlay RX	:DISP:VIEW ARX
:RFGenerator:FREQuency 452.125E6	:SOURce:FREQuency:CW 452.125E6
:RFGenerator:AMPLitude -80	:SOURce:POWer:LEVel:IMMediate:AMPLitude -80
:RFGenerator:OUTPut 'RF Out'	:SENSe:FEED:RF:PORT:OUTPut RFOut
:AFGenerator1:DESTination "FM"	:SOURce:MODulation:ANALog:FORMat FM
:AFGenerator1:FM 3000	:SOURce:FM:DEVIation 3000
:AFGenerator1:FREQuency 1000	:AFGenerator1:FREQuency 1000
:AFANalyzer:INPut "Audio In"	:SOURce:MODulation:ANALog:FORMat OFF
:AFANalyzer:FILTer1 "<20Hz HPF"	:SENSe:AFANalyzer:HPFilter HPF20
:AFANalyzer:FILTer2 ">99kHz LP"	:SENSe:AFANalyzer:LFilter OFF
:AFANalyzer:DEMPHasis "Off"	:SENSe:ADEMod:DEEMphasis OFF
:AFANalyzer:DETEctor "RMS"	:DISPlay:AFANalyzer:METRics:MMAGnitude RMS
:AFANalyzer:DETEctor:PKLocation "Filters"	This is not mapped to any functionality. By default, M8920A peak location is always set at De-Emphasis filter.
:AFANalyzer:DETEctor:SETTling "Fast"	This is not mapped to any functionality. User can use Auto BW to set the settling to automatically.
:MEASure:AFRequency:SELEct "Distn"	This is not mapped to any functionality.
:TRIGger:IMMediate	:INIT:IMM
:MEASure:AFRequency:DISTortion?	:FETCh:ADEMod1?
:MEASure:AFRequency:SELEct "SINAD"	This is not mapped to any functionality.
:MEASure:AFRequency:SINAD?	//Returned in :FETCh:ADEMod1?
:MEASure:AFRequency:SELEct "Current"	This is not mapped to any functionality.
:MEASure:AFRequency:CURRent?	N/A
:MEASure:AFRequency:SELEct "SNR"	This is not mapped to any functionality.
:MEASure:AFRequency:SNR?	//Returned in :FETCh:ADEMod1?
:MEASure:AFRequency:SELEct "AF Freq"	This is not mapped to any functionality.
:MEASure:AFRequency:FREQuency?	//Returned in :FETCh:ADEMod1?
:MEASure:AFRequency:SELEct "DC Level"	This is not mapped to any functionality.
:MEASure:AFRequency:DCVolts?	N/A

Installation Requirements

System and Installation Requirements

- M8920A Firmware Version M.23.09, Release Date 2019-06-13; or later.

Related Literature

For more detailed product and specification information refer to the following literature and web pages:

Publication title	Publication number
M8920A Measurement Guide	M8920-90003
M8920A PXIe Radio Test Set Technical Overview	5992-2821EN
M8920A PXIe Radio Test Set Configuration Guide	5992-2800EN
M8920A PXIe Radio Test Set Getting Started Guide	M8920-90001
M9470A PXIe 50W Interface Module Data Sheet	5992-3140EN
M9421A VXT PXIe Vector Transceiver Data Sheet	5992-1646EN
M9260A PXIe Audio Analyzer Data Sheet	5992-1918EN
PXIe Chassis Spec Guide	M9019-90015
PC Tested Configurations with PXIe Chassis Technical Overview	5990-7632EN
M9037A PXIe Embedded Controller Spec Guide	M9037-90015
Interface Modules and Adapters for PXIe Systems	5992-0377EN

Additional Information

Product webpages:

www.keysight.com/find/M8920A

www.keysight.com/find/N9093

www.keysight.com/find/PXI

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

