Keysight
N5166B CXG
N5171B/72B EXG
N5181B/82B MXG
X-Series Signal Generators

KEYSIGHT
TECHNOLOGIES

Programming
Compatibility
Guide

Notices

Trademark Acknowledgments

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a. Press the **Help** key, and then the key for which you wish help.

1   Overview

Inside This Guide

This guide provides a comprehensive listing of SCPI commands and programming codes for signal generator models supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators. The following list shows the supported models along with the language type for each one:

Keysight N5181A/82A MXG	SCPI commands
Keysight E4428C/38C ESG	SCPI commands
Keysight/HP E44xxB	SCPI commands
Keysight/HP 8648A/B/C/D	SCPI commands
Keysight E8257D/67D/E8663B PSG	SCPI commands
Keysight E8247C/57C/67C PSG	SCPI commands
Keysight E8241A/44A/51A/54A PSG	SCPI commands
Rhode and Schwarz SM series	SCPI commands
Keysight/HP 8656B, 8657A/B	programming codes
Keysight/HP 8662A/63A	programming codes
Aeroflex 3410 series	SCPI commands

In some cases, SCPI commands are only partially supported. This usually occurs due to a variance in parameters between the N5166B/71B/72B/81B/82B and the other signal generator models. When this condition occurs, the SCPI command shows only the supported SCPI command syntax. The Remarks column shows the part of the command that is unsupported.

When the backward compatible command differs from the X-Series signal generator due to range values or parameter differences (as noted in the remarks column), typically the command syntax is identical. Even though you may be in a the remote language mode, the Keysight X-Series signal generator

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supports the command using the range and parameter choices of the X-Series signal generator. Range values vary based on the X-Series signal generator model and configuration.

NOTE

When the range is the difference, use the range values listed in the X-Series signal generator **Data Sheet,** or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

In addition to providing the compatible command/code listings, this guide also provides you with N5166B/71B/72B/81B/82B SCPI commands that lets you perform various tasks:

— select a compatible programming language (see "Selecting the Programming Language" on page 10)

— change the signal generator identification output (see ":SYSTem:IDN" on page 12)

— query the signal generator for errors (see ":SYSTem:ERRor[:NEXT]" on page 17)

— track all executed SCPI commands using the logging command ":SYSTem:LOG:SCPI" on page 17.

Selecting the Programming Language

When using the compatible SCPI commands or programming codes in this guide, you must set the remote programming language to the correct language format. There are two methods of setting the programming language:

Preset
Language   Use this method to hold the remote programming language through instrument presets, power cycles, and `*RST`, and to set the signal generator with the default settings of the remote language choice.

Remote
Language   Use this method to set only the language mode. It does not reset the signal generator defaults to match that of the remote language instrument, and upon a preset, power cycle, and `*RST`, the signal generator changes back to the same setting as the Preset Language.

Preset Language

Use this process to set the remote programming language and the signal generator default settings to match that of the remote language.

Front Panel Operation

1. Press Utility > Power On/Preset > Preset Language > <remote programming language>.

2. Press Preset.

The Preset action changes the signal generator default settings and the remote language mode to the Step 1 selection.

SCPI Operation

1. Execute the SCPI command ":PRESet:LANGuage" on page 13.

2. Execute *RST.

*RST sets the signal generator's default settings and programming language to match that of the Preset Language selection.

Remote Language

Use this method to change the programming language to a different remote language selection without changing any system settings.

Front Panel Operation

— Press **Utility** > **I/O Config** > **Remote Language** > <remote programming language>.

SCPI Operation

— Execute the SCPI command ":SYSTem:LANGuage" on page 15.

Changing the Signal Generator Identification String

:SYSTem:IDN

Supported   All Models

`:SYSTem:IDN "<string>"`

This Keysight X-Series signal generator command modifies the identification string that the `*IDN?` query returns. Sending an empty string returns the `*IDN?` query output to its factory shipped setting. The maximum string length is 72 characters.

Modification of the `*IDN?` query output enables the Keysight X-Series signal generator to identify itself as another signal generator when it is used as a backward compatible replacement. This modification of the identification string does not affect the display diagnostic information, which is shown by pressing the **Diagnostic Info** softkey.

Changing the Signal Generator Option String

:SYSTem:OPT

Supported   All Models

`:SYSTem:OPT "<string>"`

This Keysight X-Series signal generator command modifies the option string that the `*OPT?` query returns. Sending an empty string returns the `*OPT?` query output to its factory shipped setting. The maximum string length is 72 characters.

Modification of the `*OPT?` query output enables the Keysight X-Series signal generator with options, to identify itself as another signal generator when it is used as a backward compatible replacement. This modification of the option string does not affect the display diagnostic information, which is shown by pressing the **Diagnostic Info** softkey.

Functional N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG SCPI Commands While in a Compatible Language Mode

The commands in this section are used for configuring the signal generator compatible programming language and for isolating problems.

:PRESet:LANGuage

Supported   All Models

```
:SYSTem:PRESet:LANGuage
"SCPI"|"COMP"|"8648"|"E4428C"|"E4438C"|"E8257D"|"E8267D"|"E8
663B"|"E8247C"|"E8257C"|"E8267C"|"N5181A"|"N5182A"|"E442XB"|
"E443XB"|"E8241A"|"E8244A"|"E8251A"|"E8254A"|"SMU200A"|"SMAT
E200A"|"SMJ100A"|"SMIQ"|"SML"|"SMV"|"3410"|"8662"|"8663"
:SYSTem:PRESet:LANGuage?
```

This command sets the remote language that is available when the signal generator is preset, `*RST`, or power cycled. Upon the preset, `*RST`, or power cycle, the signal generator default settings match that of the language selection.

SCPI	This choice selects the X-Series signal generator as the programming language for use with its SCPI commands using GPIB, LAN, or USB.
COMP	This choice provides compatibility for the 8656B, 8657A/B signal generator, which is supported through only a GPIB interface.
8648	This choice provides compatibility for the 8648A/B/C/D signal generator, which is supported through only a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.
E8257D or E8267D or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C or E8257C or E8267C	This choice provides compatibility for the E8247C, E8257C or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.

N5181A or
N5182A   This choice provides compatibility for the N5181A or N5182A
               signal generators which are supported through a GPIB, LAN,
               or USB interface.

E442XB or
E443XB   This choice provides compatibility for the E442XB or E443XB
               signal generators, which are supported through a GPIB, LAN,
               or USB interface.

E8241A or
E8244A or
E8251A or
E8254A   This choice provides compatibility for the E8241A, E8244A,
               E8251A, or E8254A signal generators, which are supported
               through a GPIB, LAN, or USB interface.

SMU200A or
SMATE200A or
SMJ100A or
SMIQ or
SML or
SMV   This choice provides compatibility for the Rhode and Schwarz
               SMU200A, SMATE200A, SMJ100A, SMIQ, SML, or SMV
               signal generators which are supported through a GPIB, LAN
               or USB interface.

3410   This choice provides compatibility for the Aeroflex 3410 series
               signal generator, which is supported through a GPIB, LAN, or
               USB interface.

8340   This choice provides compatibility for the 8340A/B/C/D
               signal generator, which is supported through only a GPIB
               interface.

8662, or
8663   This choice provides compatibility for the 8662A or 8663A
               signal generator, which is supported through only a GPIB
               interface.

*RST   The current Preset Language selection.

Table 1-1

Key Entry	SCPI	3410 Series	8662A	E8257D, E8267D, E8663B
	SML	N5181A,N5182A	8663A	E8241A, E8244A, E8251A, E8254A
	SMV	E4428C,E4438C	8648A/B/C/D	
	SMIQ	E442xB, E443xB	8656B, 8657A/B	
	SMJ100A	SMU200A, SMATE200A	E8247C, E8257C, E8267C	

Remarks	The setting enabled by this command is not affected by signal generator power-on, preset, or `*RST`. After a power cycle, preset, or *RST, the ":SYSTem:LANGuage" query will return the same language selection as made with the `:PRESet:LANGuage` command.

:SYSTem:LANGuage

Supported	All Models

```
:SYSTem:LANGuage
"SCPI"|"COMP"|"8648"|"E4428C"|"E4438C"|"E8257D"|"E8267D"|"E8
663B"|"E8247C"|"E8257C"|"E8267C"|"N5181A|"N5182A"|"E442XB"|"
E443XB"|"E8241A"|"E8244A"|"E8251A"|"E8254A"|"SMU200A"|"SMATE
200A"|"SMJ100A"|"SMIQ"|"SML"|"SMV"|"3410"|"8662"|"8663"
:SYSTem:LANGuage?
```

This command sets the remote language for the signal generator.

SCPI	This choice selects the X-Series signal generator as the programming language for use with its SCPI commands using GPIB, LAN, or USB.
COMP	This choice provides compatibility for the 8656B, 8657A/B signal generator, which is supported through only a GPIB interface.
8648	This choice provides compatibility for the 8648A/B/C/D signal generator, which is supported through only a GPIB interface.
E4428C or E4438C	This choice provides compatibility for the E4428C or E4438C signal generators, which are supported through a GPIB, LAN, or USB interface.

E8257D or E8267D or E8663B	This choice provides compatibility for the E8257D, E8267D, or E8663B signal generators, which are supported through a GPIB, LAN, or USB interface.
E8247C or E8257C or E8267C	This choice provides compatibility for the E8247C, E8257C or E8267C signal generators, which are supported through a GPIB, LAN, or USB interface.
N5181A or N5182A	This choice provides compatibility for the N5181A or N5182A signal generators which are supported through a GPIB, LAN, or USB interface.
E442XB or E443XB	This choice provides compatibility for the E442XB or E443XB signal generators, which are supported through a GPIB, LAN, or USB interface.
E8241A or E8244A or E8251A or E8254A	This choice provides compatibility for the E8241A, E8244A, E8251A, or E8254A signal generators, which are supported through a GPIB, LAN, or USB interface.
SMU200A or SMATE200A or SMJ100A or SMIQ or SML or SMV	This choice provides compatibility for the Rhode and Schwarz SMU200A, SMATE200A, SMJ100A, SMIQ, SML, or SMV signal generators which are supported through a GPIB, LAN or USB interface.
3410	This choice provides compatibility for the Aeroflex 3410 series signal generator, which is supported through a GPIB, LAN, or USB interface.
8340	This choice provides compatibility for the 8340A/B/C/D signal generator, which is supported through only a GPIB interface.
8662, or 8663	This choice provides compatibility for the 8662A or 8663A signal generator, which is supported through only a GPIB interface.

*RST   "SCPI"

Table 1-2

Key Entry	SCPI	3410 Series	8662A	E8257D, E8267D, E8663B
	SML	N5181A,N5182A	8663A	E8241A, E8244A, E8251A, E8254A
	SMV	E4428C,E4438C	8648A/B/C/D	
	SMIQ	E442xB, E443xB	8656B, 8657A/B	
	SMJ100A	SMU200A, SMATE200A	E8247C, E8257C, E8267C	

Remarks   While the X–Series signal generator default *RST is SCPI, in operation, the actual *RST setting matches the Preset Language selection made using .

To set the signal generator default settings to match the remote language selection, use the to change the remote language selection.

:SYSTem:ERRor[:NEXT]

Supported   All Models

```
:SYSTem:ERRor[:NEXT]?
```

This query returns the most recent error message from the signal generator error queue. If there are no error messages, the query returns the following output:

```
+0,"No error"
```

When there is more than one error message, the query will need to be sent for each message. Each error message is erased after being queried.

Key Entry   View Next Error Message

:SYSTem:LOG:SCPI

Supported   All Models

```
:SYSTem:LOG:SCPI ON|OFF|1|0
```

```
:SYSTem:LOG:SCPI?
```

Use this command to turn SCPI logging on or off.

ON|1   When initially set to ON, this command causes the X-Series
               signal generator to create the SCPI_LOG.TXT file that lists all
               of the executed SCPI commands. If the logging is turned off,
               and then back on, executed commands are added to the
               existing list. To clear and start a new SCPI list, use the signal
               generator front panel **Clear SCPI Log** softkey.

               The SCPI list will capture some errors caused by a command
               execution. But to view all errors, see
               ":SYSTem:ERRor[:NEXT]" on page 17.

               To view the SCPI_LOG.TXT file, ftp the X-Series signal
               generator file using the file path:
               /USER/BIN/SCPI_LOG.TXT.

OFF|0   When set to OFF, commands are not logged.

*RST   0

Key Entry   SCPI Logging Off On

2   Keysight N5181A/82A MXG Compatible Commands

Command List Overview

NOTE	When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following table lists the commands that are supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators and that have some difference from the X-Series commands. These differences vary due to command syntax, argument choices, ranges, or a combination. When the difference is caused by the arguments, typically the supported command syntax is the same as the Keysight X-Series signal generator command and the Keysight X-Series command has more argument choices. In this situation, using the additional choices, offered by the X-Series command, are also supported, but they are not shown in the table. For the additional choices, refer to the *Keysight X-Series Signal Generators SCPI Command Reference*.

When the range is the difference, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*. Range values vary based on the X-Series signal generator model and configuration.

Commands that are supported and identical to the X-Series commands are not listed in the following table. Instead these commands are listed as a command in the *Keysight X-Series Signal Generators SCPI Command Reference*.

Command List

Table 2-1   Supported N5181A/82A SCPI Sequences

Supported Commands	Remarks
Calibration Subsystem	
`:CALibration:BBG:CHANnel`	*This command is accepted without it performing any function.*

`:CALibration:IQ:STARt <value><units>`
 	
`:CALibration:IQ:STARt?`
	The range is dependent upon the X-Series signal generator model.

`:CALibration:IQ:STOP <value><units>`
 	
`:CALibration:IQ:STOP?`
	The range is dependent upon the X-Series signal generator model.

Route Subsystem	

`:ROUTe[:CONNectors]:TOUT`
`SWEep|SETTled|PVIDeo|PSYNc|LXI|SRUN`
 	
`:ROUTe[:CONNectors]:TOUT?`
	Supported but the following parameters are not supported: `M1|M2|M3|M4`

Digital Modulation Subsystem	

`[:SOURce]:DM:IQADjustment:DELay <val><unit>`
 	
`[:SOURce]:DM:IQADjustment:DELay?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:DM:IQADjustment:EXTernal:COFFset <val><unit>` `[:SOURce]:DM:IQADjustment:EXTernal:COFFset?`	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce]:DM:IQADjustment:SKEW <val><unit>` `[:SOURce]:DM:IQADjustment:SKEW?`	*The range is dependent upon the X-Series signal generator model.*

3 Keysight E4428C/38C ESG Compatible Commands

Command List Overview

NOTE	When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following table lists the commands that are supported by the Keysight N5171B/72B EXG and N5181B/82B MXG X-Series signal generators and that have some difference from the X-Series commands. These differences vary due to command syntax, argument choices, ranges, or a combination. Typically when syntax is the difference, there are no remarks. This means that the X-Series signal generator, while it supports the command in the E4428C/38C mode, may in rare circumstances provide a different behavior.

When the difference is caused by the arguments (parameters), typically the supported command syntax is the same as the Keysight X-Series signal generator command, with the Keysight X-Series command having more argument choices. In this situation, using the additional choices are also supported, but they are not shown in the table. For the additional choices, refer to the *Keysight X-Series Signal Generators SCPI Command Reference*.

When the range is the difference, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

Commands that are supported and identical to the X-Series commands are not listed in the following table. Instead these commands are listed as a command in the *X-Series Signal Generators SCPI Command Reference*.

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Command List

Table 3-1   Supported E4428C/38C SCPI Sequences

Supported Commands	Remarks
Communication Subsystem	

`:SYSTem:COMMunicate:PMETer:TIMEout <num>[<time suffix>]`
 	
`:SYSTem:COMMunicate:PMETer:TIMEout?`	

Memory Subsystem	

`:MEMory:DATA:FIR <"filename">,osr,coefficient{,coefficient}`
 	
`:MEMory:DATA:FIR? <"filename">`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`:MEMory:DATA:FSK <"filename">,num_states,f0,f0,...[,diff_state,num_diff_states,diff0,diff1,...]`
 	
`:MEMory:DATA:FSK? <"filename">`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

System Subsystem	

`:SYSTem:FILEsystem:SAFEmode ON|OFF|1|0`
 	
`:SYSTem:FILEsystem:SAFEmode?`
	This command is accepted but performs no action.

`:SYSTem:LANGuage "SCPI"|"COMP"|"8648"`
 	
`:SYSTem:LANGuage?`
	Supported but the following parameters are not supported: `|"NADC"|"PDC"|"PHS"`
	
	NOTE: *Changing the language while in a language mode other than SCPI may produce undesired results when executing commands.*

`:SYSTem:PON:TYPE PRESet|LAST`
 	
`:SYSTem:PON:TYPE?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`:SYSTem:PRESet:LANGuage "SCPI"|"COMP"|"8648"`
 	
`:SYSTem:PRESet:LANGuage?`
	Supported but the following parameters are not supported: `|"NADC"|"PDC"|"PHS"`
	
	NOTE: *Changing the language while in a language mode other than SCPI may produce undesired results when executing commands.*

`:SYSTem:PRESet[:USER]:SAVE`	**While** `[:USER]` **is optional in E4428C/38C mode, it is required in the X-Series SCPI mode.**

Table 3-1   Supported E4428C/38C SCPI Sequences (Continued)

Supported Commands	Remarks
Trigger Subsystem	

`:TRIGger[:SEQuence]:SOURce`
`BUS|IMMediate|EXTernal|KEY`
 	
`:TRIGger[:SEQuence]:SOURce?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

Supported Commands	Remarks
Amplitude Modulation Subsystem	

`[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPeda`
`nce <50|600>`
 	
`[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPeda`
`nce <50|600>`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:AM:INTernal:FREQuency:STEP[:`
`INCRement] <num>`
 	
`[:SOURce]:AM:INTernal:FREQuency:STEP[:`
`INCRement]?`	

`[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TR`
`IGger IMMediate|KEY|EXTernal|BUS`
 	
`[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TR`
`IGger?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:AM[1]|2:INTernal[1]|2:FREQue`
`ncy <value><unit>|UP|DOWN`
 	
`[:SOURce]:AM[1]|2:INTernal[1]|2:FREQue`
`ncy?`
	The range is dependent upon the X-Series signal generator model.

Frequency Subsystem	

`[:SOURce]:FREQuency:FIXed`
`<value><unit>|UP|DOWN`
 	
`[:SOURce]:FREQuency:FIXed?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency[:CW]`
`<value><unit>|UP|DOWN`
 	
`[:SOURce]:FREQuency[:CW]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:ROSCillator:BANDwidth:EXTern`
`al <value>`
 	
`[:SOURce]:ROSCillator:BANDwidth:EXTern`
`al?`
	The range is dependent upon the X-Series signal generator model.

Frequency Modulation Subsystem	

Table 3-1   Supported E4428C/38C SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance 50|600`
 	
`[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPedance?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS`
 	
`[:SOURce]:FM[1]|2:INTernal[1]:SWEep:TRIGger?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

List/Sweep Subsystem	

`[:SOURce]:LIST:TRIGger:SOURce BUS|IMMediate|EXTernal|KEY`
 	
`[:SOURce]:LIST:TRIGger:SOURce?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:SWEep:MODE AUTO|MANual`
 	
`[:SOURce]:SWEep:MODE?`	

Low Frequency Output Subsystem	

`[:SOURce]:LFOutput:FUNCtion[1]|2:SHAPe SINE|DUALsine|SWEPtsine|TRIangle|SQUare|RAMP|NOISe|DC`
 	
`[:SOURce]:LFOutput:FUNCtion[1]|2:SHAPe?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:LFOutput:FUNCtion[1]:SWEep:TRIGger BUS|IMMediate|EXTernal|KEY`
 	
`[:SOURce]:LFOutput:FUNCtion[1]:SWEep:TRIGger?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:LFOutput:SOURce INT[1]|FUNCtion`
 	
`[:SOURce]:LFOutput:SOURce?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

Phase Modulation Subsystem	

`[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance <50|600>`
 	
`[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPedance?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe SINE|TRIangle|SQUare|RAMP|NOISe`
 	
`[:SOURce]:PM[1]|2:INTernal[1]:FUNCtion:SHAPe?`
	Supported but the following parameters are not supported: `DUALsine|SWEPtsine`

Table 3-1   Supported E4428C/38C SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger IMMediate|KEY|EXTernal|BUS`
 	
`[:SOURce]:PM[1]|2:INTernal[1]:SWEep:TRIGger?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

Power Subsystem	

`[:SOURce]:POWer:ALC:SEARch ON|OFF|1|0|ONCE`
 	
`[:SOURce]:POWer:ALC:SEARch?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:POWer:ALC:SOURce INTernal|DIODe`
 	
`[:SOURce]:POWer:ALC:SOURce?`
	Supported but the following parameter is not supported: `MMHead`.

`[:SOURce]:POWer:ALTernate:AMPLitude <value>dB`
 	
`[:SOURce]:POWer:ALTernate:AMPLitude?`
	The range is dependent upon the X-Series signal generator model.
	
	The Alternate Amplitude behavior differs in the X-Series Signal Generators. The entered value is a desired value. The signal generator tries to accommodate as much of the desired value (delta) as possible for each frequency/power setting without capping the value when impossible at a certain point.

`[:SOURce]:POWer:ALTernate:TRIGger[:SOURce] INTernal|EXTernal|MANual`
 	
`[:SOURce]:POWer:ALTernate:TRIGger[:SOURce]?`
	Supported with the following choice being accepted but performs no action: `MANual`

`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit>|UP|DOWN`
 	
`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?`
	The range is dependent upon the X-Series signal generator model.

Pulse Modulation Subsystem	

`[:SOURce]:PULM:INTernal[1]:DELay <delay>|UP|DOWN`
 	
`[:SOURce]:PULM:INTernal[1]:DELay? [UP|DOWN]`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:PULM:SOURce INT|EXT[1]|EXT2`
 	
`[:SOURce]:PULM:SOURce?`
	Parameters differ from the N51xxB command. When sending `EXT2`, **it is accepted and the query returns** `EXT2`, **but** `EXT[1]` **is actually selected.**

`[:SOURce]:PULM:SOURce:INTernal SQUare|FRUN|TRIGgered|DOUBlet|GATEd`
 	
`[:SOURce]:PULM:SOURce:INTernal?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

Table 3-1   Supported E4428C/38C SCPI Sequences (Continued)

Supported Commands	Remarks
Custom Subsystem	

`[:SOURce]:RADio[1]|2|3|4:CUSTom:BBCLoc k INT[1]`
 	
`[:SOURce]:RADio[1]|2|3|4:CUSTom:BBCLoc k?`
	Supported but the following choice is not supported: `EXT[1]`.

`[:SOURce]:RADio:CUSTom:FILTer RNYQuist|NYQuist|GAUSsian|RECTangle|IS 95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|EWIDe| WCDMa|AC4Fm|EDGE|EHSR|"user FIR"`
 	
`[:SOURce]:RADio:CUSTom:FILTer?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:RADio:CUSTom:MODulation[:TYP E]`
`ASK|BPSK|QPSK|UQPSk|IS95QPSK|GRAYQPSK| OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8P SK|MSK|FSK2|FSK4|FSK8|FSK16|C4FM|QAM4| QAM16|QAM32|QAM64|QAM128|QAM256|QAM102 4|UIQ|UFSK`
 	
`[:SOURce]:RADio:CUSTom:MODulation[:TYP E]?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:RADio:CUSTom:SRATe <val>` `[:SOURce]:RADio:CUSTom:SRATe?`	*The range is dependent upon the X-Series signal generator model.*

`[:SOURce]:RADio:CUSTom:VCO:CLOCk[:SOUR ce] INTernal|EXTernal`
 	
`[:SOURce]:RADio:CUSTom:VCO:CLOCk[:SOUR ce]?`
	This command is accepted but performs no action. The following parameter is not accepted: `EXTernal`

Dmodulation Subsystem	

`[:SOURce]:RADio:DMODulation:ARB:MODula tion[:TYPE]`
`ASK|BPSK|QPSK|UQPSk|IS95QPSK|GRAYQPSK| OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8P SK|EDGE|MSK|FSK2|FSK4|FSK8|FSK16|C4FM| QAM4|QAM16|QAM32|QAM64|QAM128|QAM256|U IQ|UFSK`
 	
`[:SOURce]:RADio:DMODulation:ARB:MODula tion[:TYPE]?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

`[:SOURce]:RADio:DMODulation:ARB:SCLock :RATE <val>`
 	
`[:SOURce]:RADio:DMODulation:ARB:SCLock :RATE?`
	The range is dependent upon the X-Series signal generator model.

Table 3-1   Supported E4428C/38C SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:RADio:DMODulation:ARB:SETup GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|MCARrier|"file name"`
 	
`[:SOURce]:RADio:DMODulation:ARB:SETup?`
	Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.

Digital Modulation Subsystem	
`[:SOURce]:BURSt:SOURce INTernal[1]|EXTernal[1]`	**Accepted but performs not action. The following query is not supported:** `[:SOURce]:BURSt:SOURce?`

`[:SOURce]:DM:EXTernal:FILTer 40e6|THRough`
 	
`[:SOURce]:DM:EXTernal:FILTer?`
	Commands are accepted without error by the signal generator, but no action occurs.

`[:SOURce]:DM:EXTernal:FILTer:AUTO ON|OFF|1|0`	**Accepted but performs no action. The following query is not supported:** `[:SOURce]:DM:EXTernal:FILTer:AUTO?` **If the query is used, the following error is generated:** —113, `Undefined header`
`[:SOURce]:DM:EXTernal:HCRest[:STATe] ON|OFF|1|0`	**Accepted but performs no action. The following query is not supported:** `[:SOURce]:DM:EXTernal:HCRest[:STATe]?` **If the query is used, the following error is generated:** —113, `Undefined header`

`[:SOURce]:DM:EXTernal:POLarity[:ALL] NORMal|INVert|INVerted`
 	
`[:SOURce]:DM:EXTernal:POLarity[:ALL]?`	

`[:SOURce]:DM:SOURce[1] EXTernal|INTernal|OFF`
 	
`[:SOURce]:DM:SOURce?`
	Supported but the following command syntax is not supported: `:SOURce:DM:SOURce2`
	The following parameters also are not supported: `|BBG1|BBG2|BBG3|BBG4|EXT600`

Dual ARB Subsystem	

`[:SOURce]:RADio:ARB:BASEband:FREQuency :OFFSet <value>`
 	
`[:SOURce]:RADio:ARB:BASEband:FREQuency :OFFSet?`
	The range is dependent upon the X-Series signal generator model.

Table 3-1   Supported E4428C/38C SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:ARB:GENerate:SINE ["filename"],[<osr>],[<scale>],[I|Q|{I Q}]`	*Parameters differ, refer to the Keysight X-Series Signal Generator SCPI Command Reference for a complete listing.*

`[:SOURce]:RADio:ARB:NOISe:CBWidth <val>`
 	
`[:SOURce]:RADio:ARB:NOISe:CBWidth?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:RADio:ARB:SCLock:RATE <val>`
 	
`[:SOURce]:RADio:ARB:SCLock:RATE?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:RADio[:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe OFF`
 	
`[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?`
	Supported but the following parameters are not supported: `|TIME|SAMPles`.

`[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay[:TIME] <value>`
 	
`[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay[:TIME]?`
	Refer to the "Keysight X-Series Signal Generators SCPI Reference" for the range values.

`[:SOURce]:RADio:ARB:VCO:CLOCk[:SOURce] INTernal`
 	
`[:SOURce]:RADio:ARB:VCO:CLOCk[:SOURce]?`
	This command is accepted but performs no action. The following parameter is not accepted: `EXTernal`

Multi-Tone Subsystem	

`[:SOURce]:RADio:MTONe:ARB:SCLock:RATE <value>`
 	
`[:SOURce]:RADio:MTONe:ARB:SCLock:RATE?`
	The range is dependent upon the X-Series signal generator model.

Two Tone Subsystem	

`[:SOURce]:RADio:TTONe:ARB:SCLock:RATE <value>`
 	
`[:SOURce]:RADio:TTONe:ARB:SCLock:RATE?`
	The range is dependent upon the X-Series signal generator model.

4   Keysight/HP E44xxB Compatible Commands

Command List Overview

<table>
<tr>
<td>NOTE</td>
<td>When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.</td>
</tr>
</table>

The following table shows the SCPI commands supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators.

Some commands may have identical syntax to the X-Series signal generator commands but the parameters (arguments) may show a difference. When this occurs, typically the X-Series command has more parameters that are also supported while using the compatible command. To compare the compatible commands with the X-Series commands, refer to the Keysight X-Series Signal Generators SCPI Command Reference.

When the command requires a range value, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

KEYSIGHT
TECHNOLOGIES

Command List

Table 4-1   Supported E44xxB SCPI Sequences

Supported Commands	Remarks
IEEE Common Commands	
`*CLS`	
`*ESE <data>` `*ESE?`	
`*ESR?`	
`*IDN?`	
`*OPC` `*OPC?`	
`*RCL <reg_num>`	
`*RST`	
`*SAV <reg_num>`	
`*SRE <data>` `*SRE?`	
`*STB?`	
`*TRG`	
`*TST?`	
`*WAI`	
Calibration Subsystem	
`:CALibration:DCFM`	
`:CALibration:IQ`	
`:CALibration:IQ:DEFault`	
`:CALibration:IQ:FULL`	
`:CALibration:IQ:STARt <value>` `:CALibration:IQ:STARt?`	*The range is dependent upon the X-Series signal generator model.*
`:CALibration:IQ:STOP <value>` `:CALibration:IQ:STOP?`	*The range is dependent upon the X-Series signal generator model.*
Communication Subsystem	
`:SYSTem:COMMunicate:GPIB:ADDRess <number>` `:SYSTem:COMMunicate:GPIB:ADDRess?`	
Diagnostic Subsystem	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`:DIAGnostic[:CPU]:INFOrmation:CCOunt:ATTenuator?`	
`:DIAGnostic[:CPU]:INFOrmation:CCOunt:PON?`	
`:DIAGnostic[:CPU]:INFOrmation:CCOunt:PROTection?`	
`:DIAGnostic[:CPU]:INFOrmation:DISPlay:OTIMe?`	
`:DIAGnostic[:CPU]:INFOrmation:LIDN?`	
`:DIAGnostic[:CPU]:INFOrmation:OPTions?`	
`:DIAGnostic[:CPU]:INFOrmation:OPTions:DETail?`	
`:DIAGnostic[:CPU]:INFOrmation:OTIMe?`	
`:DIAGnostic[:CPU]:INFOrmation:SDATe?`	
Display Subsystem	
`:DISPlay:BRIGhtness <value>` `:DISPlay:BRIGhtness?`	
`:DISPlay:CONTrast <value>` `:DISPlay:CONTrast?`	

`:DISPlay:INVerse ON|OFF|1|0`
 	
`:DISPlay:INVerse?`	

`:DISPlay:REMote ON|OFF|1|0` `:DISPlay:REMote?`	
Memory Subsystem	
`:MEMory:CATalog:BINary?`	
`:MEMory:CATalog:DMOD?`	
`:MEMory:CATalog:FIR?`	
`:MEMory:CATalog:FSK?`	
`:MEMory:CATalog:LIST?`	
`:MEMory:CATalog:MTONe?`	
`:MEMory:CATalog:SEQ?`	
`:MEMory:CATalog:STATe?`	
`:MEMory:CATalog[:ALL]?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
:MEMory:COPY[:NAME] "<file name>","<file name>"	
:MEMory:DATA "<file name>",<datablock>	
:MEMory:DATA? "<file name>"	
:MEMory:DATA:FIR "<file name>",osr,coefficient{,coefficient}	
:MEMory:DATA:FIR? "<file name>"	
:MEMory:DATA:FSK "<file name>",<num_states>,<f0>,<f1>,...<f(n)> [,<diff_state>,<num_diff_states>,<diff0 >,<diff1>,...<diff(n)>]	
:MEMory:DATA:FSK? "<file name>"	
:MEMory:DATA:IQ "<file name>",<offsetQ>,<num_states>,<i0>,<q0> ,<i1>, <q1>,...<i(n),q(n)>[,<diff_state>,<num_ diff_states>,<diff0>, <diff1>,...<diff(n)>]	
:MEMory:DATA:IQ? "<file name>"	
:MEMory:DELete:ALL	
:MEMory:DELete:BINary	
:MEMory:DELete:MDMod	
:MEMory:DELete:SEQ	
:MEMory:DELete:STATe	
:MEMory:DELete[:NAME] "<file name>"	
:MEMory:FREE[:ALL]?	
:MEMory:LOAD:LIST "<file name>"	
:MEMory:MOVE <src_file>,<dest_file>	
:MEMory:STATe:COMMent <reg_num>,<seq_num>,"<comment>"	
:MEMory:STATe:COMMent? <reg_num>,<seq_num>	
:MMEMory:CATalog? "<msus>"	
:MMEMory:COPY "<file name>","<file name>"	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`:MMEMory:DATA "<file name>",<datablock>`	
`:MMEMory:DATA? "<file name>"`	
`:MMEMory:DELete[:NAME] "<file name>",["<msus>"]`	
`:MMEMory:LOAD:ARB:ALL`	
`:MMEMory:LOAD:LIST "<file name>"`	
`:MMEMory:MOVE <src_file>,<dest_file>`	
`:MMEMory:STORe:ARB:ALL`	
`:MMEMory:STORe:LIST "<file name>"`	
`:MEMory:STORe:LIST "<file name>"`	
Output Subsystem	
`:OUTPut:BLANking:AUTO ON|OFF|1|0` `:OUTPut:BLANking:AUTO?`	
`:OUTPut:BLANking[:STATe] ON|OFF|1|0` `:OUTPut:BLANking[:STATe]?`	
`:OUTPut:MODulation[:STATe] ON|OFF|1|0` `:OUTPut:MODulation[:STATe]?`	**Requires Option UNT (AM/FM/Phase Modulation)**
`:OUTPut:PROTection:CLEar`	
`:OUTPut:PROTection[:STATe] ON|OFF|1|0` `:OUTPut:PROTection[:STATe]?`	
`:OUTPut:PROTection:TRIPped?`	
`:OUTPut[:STATe] ON|OFF|1|0` `:OUTPut[:STATe]?`	
Status Subsystem	
`:STATus:OPERation:CONDition?`	
`:STATus:OPERation:ENABle <value>` `:STATus:OPERation:ENABle?`	
`:STATus:OPERation:NTRansition <value>` `:STATus:OPERation:NTRansition?`	
`:STATus:OPERation:PTRansition <value>` `:STATus:OPERation:PTRansition?`	
`:STATus:OPERation[:EVENt]?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`:STATus:PRESet`	
`:STATus:QUEStionable:CALibration:CONDit ion?`	
`:STATus:QUEStionable:CALibration:ENABle <value>` `:STATus:QUEStionable:CALibration:ENABle ?`	
`:STATus:QUEStionable:CALibration:NTRans ition <value>` `:STATus:QUEStionable:CALibration:NTRans ition?`	
`:STATus:QUEStionable:CALibration:PTRans ition <value>` `:STATus:QUEStionable:CALibration:PTRans ition?`	
`:STATus:QUEStionable:CALibration[:EVENt ]?`	
`:STATus:QUEStionable:CONDition?`	
`:STATus:QUEStionable:ENABle <value>` `:STATus:QUEStionable:ENABle?`	
`:STATus:QUEStionable:FREQuency:CONDitio n?`	
`:STATus:QUEStionable:FREQuency:ENABle <value>` `:STATus:QUEStionable:FREQuency:ENABle?`	
`:STATus:QUEStionable:FREQuency:NTRansit ion <value>` `:STATus:QUEStionable:FREQuency:NTRansit ion?`	
`:STATus:QUEStionable:FREQuency:PTRansit ion <value>` `:STATus:QUEStionable:FREQuency:PTRansit ion?`	
`:STATus:QUEStionable:FREQuency[:EVENt]?`	
`:STATus:QUEStionable:NTRansition <value>` `:STATus:QUEStionable:NTRansition?`	
`:STATus:QUEStionable:POWer:CONDition?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
:STATus:QUEStionable:POWer:ENABle <value> :STATus:QUEStionable:POWer:ENABle?	
:STATus:QUEStionable:POWer:NTRansition <value> :STATus:QUEStionable:POWer:NTRansition?	
:STATus:QUEStionable:POWer:PTRansition <value> :STATus:QUEStionable:POWer:PTRansition?	
:STATus:QUEStionable:POWer[:EVENt]?	
:STATus:QUEStionable:PTRansition <value> :STATus:QUEStionable:PTRansition?	
:STATus:QUEStionable[:EVENt]?	
System Subsystem	
:SYSTem:CAPability?	
:SYSTem:ERRor[:NEXT]?	
:SYSTem:HELP:MODE SINGle|CONTinuous :SYSTem:HELP:MODE?	CONTinuous **is accepted without error, but performs no action. The query returns only** SING.
:SYSTem:LANGuage "SCPI"|"COMP"|"8648" :SYSTem:LANGuage?	**Supported but the following parameters are not supported:** "NADC"|"PDC"|"PHS" **NOTE:** *Changing the language while in a language mode other than SCPI may produce undesired results when executing commands.*
:SYSTem:PON:TYPE PRESet|LAST :SYSTem:PON:TYPE?	
:SYSTem:PRESet	
:SYSTem:PRESet:ALL	
:SYSTem:PRESet:LANGuage "SCPI"|"COMP"|"8648" :SYSTem:PRESet:LANGuage?	**Supported but the following parameters are not supported:** "NADC"|"PDC"|"PHS" **NOTE:** *Changing the language while in a language mode other than SCPI may produce undesired results when executing commands.*
:SYSTem:PRESet:PERSistent	
:SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`:SYSTem:PRESet:PN9 NORMal|QUICk` `:SYSTem:PRESet:PN9?`	
`:SYSTem:PRESet[:USER]:SAVE`	
`:SYSTem:SSAVer:DELay <value>` `:SYSTem:SSAVer:DELay?`	
`:SYSTem:SSAVer:MODE LIGHt|TEXT` `:SYSTem:SSAVer:MODE?`	
`:SYSTem:SSAVer:STATe ON|OFF` `:SYSTem:SSAVer:STATe?`	
`:SYSTem:VERSion?`	
Trigger Subsystem	
`:ABORt`	
`:INITiate:CONTinuous[:ALL] ON|OFF|1|0` `:INITiate:CONTinuous[:ALL]?`	
`:INITiate[:IMMediate][:ALL]`	

`:TRIGger:OUTPut:POLarity`
`POSitive|NEGative`
`:TRIGger:OUTPut:POLarity?`	

`:TRIGger[:SEQuence]:SLOPe`
`POSitive|NEGative`
`:TRIGger[:SEQuence]:SLOPe?`	

`:TRIGger[:SEQuence]:SOURce`
`BUS|IMMediate|EXTernal|KEY`
`:TRIGger[:SEQuence]:SOURce?`	

`:TRIGger[:SEQuence][:IMMediate]`	
`[:SOURce]:TSWeep`	
Unit Subsystem	
`:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF` `:UNIT:POWer?`	
Amplitude Modulation Subsystem	

`[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPlin`
`g AC|DC`
`[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPlin`
`g?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:AM[1]|2:INTernal[1]:FREQuency <value><unit>` `[:SOURce]:AM[1]|2:INTernal[1]:FREQuency ?`	
`[:SOURce]:AM[1]|2:INTernal[1]:FUNCtion: SHAPe <enum>` `[:SOURce]:AM[1]|2:INTernal[1]:FUNCtion: SHAPe?`	
`[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIM E <value><unit>` `[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TIM E?`	
`[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRI Gger <enum>` `[:SOURce]:AM[1]|2:INTernal[1]:SWEep:TRI Gger?`	
`[:SOURce]:AM[1]|2:SOURce INT[1]|EXT1|EXT2` `[:SOURce]:AM[1]|2:SOURce?`	
`[:SOURce]:AM[1]|2:STATe ON|OFF|1|0` `[:SOURce]:AM[1]|2:STATe?`	
`[:SOURce]:AM[1]|2[:DEPTh] <value><unit>` `[:SOURce]:AM[1]|2[:DEPTh]?`	
`[:SOURce]:AM[1]|2[:DEPTh][:LINear]:TRAC k ON|OFF|1|0` `[:SOURce]:AM[1]|2[:DEPTh]:TRACk?`	
Digital Modulation Subsystem	
`[:SOURce]:BURSt:SOURce INTernal[1]`	**Supported but the following parameter is not supported:** `EXTernal[1]` **Supported but the following query is not supported:** `[:SOURce]:BURSt:SOURce?`
`[:SOURce]:DM:BBFilter <value>|THRough` `[:SOURce]:DM:BBFilter?`	**Command accepted without error but does nothing.**
`[:SOURce]:DM:EXTernal:POLarity NORMal|INVerted` `[:SOURce]:DM:EXTernal:POLarity?`	
`[:SOURce]:BURSt:STATe ON|OFF|1|0` `[:SOURce]:BURSt:STATe?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:DM:EXTernal:ALC:BANDwidth|BWIDth NORMal|NARRow` `[:SOURce]:DM:EXTernal:ALC:BANDwidth|BWIDth?`	
`[:SOURce]:DM:EXTernal:HICRest[:STATe] ON|OFF|1|0`	**Supported but the following query is not supported:** `[:SOURce]:DM:EXTernal:HICRest[:STATe]?`
`[:SOURce]:DM:IQADjustment:Gain <value><unit>` `[:SOURce]:DM:IQADjustment:Gain?`	
`[:SOURce]:DM:IQADjustment:IOFFset <value><unit>` `[:SOURce]:DM:IQADjustment:IOFFset?`	
`[:SOURce]:DM:IQADjustment:QOFFset <value><unit>` `[:SOURce]:DM:IQADjustment:QOFFset?`	
`[:SOURce]:DM:IQADjustment:QSKew <value><unit>` `[:SOURce]:DM:IQADjustment:QSKew?`	
`[:SOURce]:DM:IQADjustment[:STATe] ON|OFF|1|0` `[:SOURce]:DM:IQADjustment[:STATe]?`	
`[:SOURce]:DM:SOURce EXTernal|INTernal[1]` `[:SOURce]:DM:SOURce?`	
`[:SOURce]:DM:STATe ON|OFF|1|0` `[:SOURce]:DM:STATe?`	
Dual ARB Subsystem	
`[:SOURce]:RADio:ARB:CLIPping "<file name>",IJQ|IORQ,<10-100%>`	
`[:SOURce]:RADio:ARB:CLOCk:SRATe <value>` `[:SOURce]:RADio:ARB:CLOCk:SRATe?`	
`[:SOURce]:RADio:ARB:MARKer:CLEar "<file name>",<mkr(1|2)>,<first_point>, <last_point>`	
`[:SOURce]:RADio:ARB:MARKer:CLEar:ALL "<file name>",<mkr(1|2)>`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:ARB:MARKer:POLarity NEGative|POSitive` `[:SOURce]:RADio:ARB:MARKer:POLarity?`	
`[:SOURce]:RADio:ARB:MARKer:RFBLank ON|OFF|1|0` `[:SOURce]:RADio:ARB:MARKer:RFBLank?`	
`[:SOURce]:RADio:ARB:MARKer[:SET] "<file name>",<mkr(1|2)>,<first_Point>, <last_point>,<skip_count>`	
`[:SOURce]:RADio:ARB:RETRigger 1|0`	**This command is not recommended; the following command is the preferred syntax for the ESG E44xxB.**
`[:SOURce]:RADio:ARB:RETRigger ON|OFF` `[:SOURce]:RADio:ARB:RETRigger?`	**This query for the Keysight X-Series Vector Signal Generators (N5166B/72B/82B)) only returns the string ON or OFF. This is different from the ESG E44xxB query which returns a 1 or 0.**
`[:SOURce]:RADio:ARB:RFILter <value>|THRough`	**Command accepted without error but does nothing.** **The query form of the command is not compatible.**
`[:SOURce]:RADio:ARB:SCALing "<file name>",<1%–100%>`	
`[:SOURce]:RADio:ARB:SEQuence "<file name>","<waveform>",<reps>,<mkr1(1|0)>, <mkr2(1|0)>{,"<waveform>",<rep>,<mkr1(1 |0)>,<mkr2(1|0)>}` `[:SOURce]:RADio:ARB:SEQuence? "<file name>"`	
`[:SOURce]:RADio:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE|SADVance` `[:SOURce]:RADio:ARB:TRIGger:TYPE?`	
`[:SOURce]:RADio:ARB:TRIGger:TYPE:GATE:A CTive LOW|HIGH` `[:SOURce]:RADio:ARB:TRIGger:TYPE:GATE:A CTive?`	
`[:SOURce]:RADio:ARB:TRIGger[:SOURce] KEY|EXT|BUS` `[:SOURce]:RADio:ARB:TRIGger[:SOURce]?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay <value>` `[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay?`	
`[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0` `[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?`	
`[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative` `[:SOURce]:RADio:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?`	
`[:SOURce]:RADio:ARB:WAVeform "<file name>"` `[:SOURce]:RADio:ARB:WAVeform?`	
`[:SOURce]:RADio:ARB[:STATe] ON|OFF|1|0` `[:SOURce]:RADio:ARB[:STATe]?`	
Multi-Tone Subsystem	
`[:SOURce]:RADio:MTONe:ARB:SETup "<file name>"` `[:SOURce]:RADio:MTONe:ARB:SETup?`	
`[:SOURce]:RADio:MTONe:ARB:SETup:STORe "<file name>"`	
`[:SOURce]:RADio:MTONe:ARB:SETup:TABLe <freq_spacing>,<num_tones>{,<phase>, <state>}` `[:SOURce]:RADio:MTONe:ARB:SETup:TABLe?`	
`[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing <freq_spacing>` `[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing?`	
`[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes <num_tones>` `[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes?`	
`[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize FIXed|RANDom` `[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize?`	

Table 4-1   Supported E44xxB SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:P HASe:INITialize:SEED FIXed|RANDom` `[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:P HASe:INITialize:SEED?`	
`[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:R OW <row_number>,<power>,<phase>, <state>` `[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:R OW? <row_number>`	
`[:SOURce]:RADio:MTONe:ARB[:STATe] ON|OFF|1|0` `[:SOURce]:RADio:MTONe:ARB[:STATe]?`	

5 Keysight/HP 8648A/B/C/D Compatible Commands

Command List Overview

> **NOTE**
> Compatibility is provided for GPIB only; USB and LAN are **not** supported.

> **NOTE**
> When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following table shows the 8648A/B/C/D SCPI commands supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators.

When there is a parameter (argument) difference between the supported command and the X-Series signal generator command, typically the X-Series command has more parameters (the difference), which are also supported while using the compatible command. For the additional parameters, refer to the *Keysight X-Series Signal Generators SCPI Command Reference*. The remarks column of the command table states when there is a parameter difference.

When the range is the difference, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

![Keysight Technologies logo]

Command List

Table 5-1   Supported 8648A/B/C/D SCPI Sequences

Supported Commands	Remarks
IEEE Common Commands	
`*CLS?`	
`*ESE <dec. num. data>` `*ESE?`	
`*IDN?`	
`*OPC` `*OPC?`	
`*RCL <reg_num>[,<seq_num>]`	
`*RST?`	
`*SAV <reg_num>[,<seq_num>]`	
`*SRE <dec. num. data>` `*SRE?`	
`*STB?`	
`*TST?`	
`*WAI?`	
Status Subsystem	
`:STATus:QUEStionable:MODulation:CONDition?`	**Supported but without the** `[:SOURce]` **mnemonic, including** `:SOUR`.
`:STATus:QUEStionable:MODulation:ENABle <NR1>`	**Supported but without the** `[:SOURce]` **mnemonic, including** `:SOUR`.
`:STATus:QUEStionable:MODulation:ENABle?`	**Supported but without the** `[:SOURce]` **mnemonic, including** `:SOUR`.
`:STATus:QUEStionable:MODulation:EVENt?`	**Supported but without the** `[:SOURce]` **mnemonic, including** `:SOUR`.
`[:SOURce]:STATus:QUEStionable:POWer:CONDition?`	
`[:SOURce]:STATus:QUEStionable:POWer:ENABle <NR1>` `[:SOURce]:STATus:QUEStionable:POWer:ENABle?`	
`[:SOURce]:STATus:QUEStionable:POWer:EVENt?`	
`[:SOURce]:STATus:QUEStionable:CALibration:FEXTension[:EVENt]?`	

Table 5-1   Supported 8648A/B/C/D SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:STATus:QUEStionable:CALibration:FEXTension:CONDition?`	
`[:SOURce]:STATus:QUEStionable:CALibration:ENABle <NR1>` `[:SOURce]:STATus:QUEStionable:CALibration:ENABle?`	
System Subsystem	
`[:SOURce]:SYSTem:LANGuage "COMP"│"SCPI"` `[:SOURce]:SYSTem:LANGuage?`	
`[:SOURce]:SYSTem:ERRor?`	
`[:SOURce]:SYSTem:VERSion?`	
Amplitude Subsystem	
`[:SOURce]:OUTPut:STATe ON│OFF` `[:SOURce]:OUTPut:STATe?`	
`[:SOURce]:POWer:AMPLitude <value><units>` `[:SOURce]:POWer:AMPLitude?`	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce]:POWer:ATTenuation:AUTO ON│OFF` `[:SOURce]:POWer:ATTenuation:AUTO?`	
`[:SOURce]:POWer:REFerence <value><units>` `[:SOURce]:POWer:REFerence?`	
`[:SOURce]:POWer:REFerence:STATe ON│OFF` `[:SOURce]:POWer:REFerence:STATe?`	
Frequency Subsystem	
`[:SOURce]:FREQuency:CW <value><units>` `[:SOURce]:FREQuency:CW?`	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce]:FREQuency:REFerence <value><units>` `[:SOURce]:FREQuency:REFerence?`	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce]:FREQuency:REFerence:STATe ON│OFF` `[:SOURce]:FREQuency:REFerence:STATe?`	
Amplitude Modulation Subsystem	

Table 5-1   Supported 8648A/B/C/D SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:AM:DEPTh <value>PCT` `[:SOURce]:AM:DEPTh?`	**Refer to the X-Series signal generator Data Sheet for the range values.**
`[:SOURce]:AM:STATe ON|OFF` `[:SOURce]:AM:STATe?`	

`[:SOURce]:AM:SOURce`
`INTernal[1]|INTernal2|EXTernal`
 	
`[:SOURce]:AM:SOURce?`
	While the 8648A/B/C/D supports multiple source selections (e.g. `INTernal1,EXTernal`) **within a single command execution, the X-Series signal generators support only a single source selection.**

`[:SOURce]:AM:INTernal[1]|2:FREQuency`
`<val><unit>`
 	
`[:SOURce]:AM:INTernal[1]|2:FREQuency`
`?`
	Refer to the X-Series signal generator Data Sheet for the range values.

`[:SOURce]:AM:INTernal2:FUNCtion:SHAPe`
`SINe|TRIangle|SQUare`
 	
`[:SOURce]:AM:INTernal2:FUNCtion:SHAP`
`e?`
	Supported but the following parameter is not supported: `SAW`

`[:SOURce]:AM:EXTernal:COUPling`
`AC|DC`
`[:SOURce]:AM:EXTernal:COUPling?`	

Frequency Modulation Subsystem	
`[:SOURce]:CALibration:DCFM`	
`[:SOURce]:FM:DEViation <value>kHz` `[:SOURce]:FM:DEViation?`	**Refer to the X-Series signal generator Data Sheet for the range values.**
`[:SOURce]:FM:STATe ON|OFF` `[:SOURce]:FM:STATe?`	

`[:SOURce]:FM:SOURce`
`INTernal[1]|INTernal2|EXTernal`
 	
`[:SOURce]:FM:SOURce?`
	While the 8648A/B/C/D supports multiple source selections (e.g. `INTernal1,EXTernal`) **within a single command execution, the X-Series signal generators support only a single source selection.**

`[:SOURce]:FM:INTernal[1]|2:FREQuency`
`<val><unit>`
 	
`[:SOURce]:FM:INTernal[1]|2:FREQuency`
`?`
	Refer to the X-Series signal generator Data Sheet for the range values.

`[:SOURce]:FM:INTernal2:FUNCtion:SHAPe`
`SINe|TRIangle|SQUare`
 	
`[:SOURce]:FM:INTernal2:FUNCtion:SHAP`
`e?`
	Supported but the following parameters are not supported: `SAW`

Table 5-1   Supported 8648A/B/C/D SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:FM:EXTernal:COUPling AC|DC` `[:SOURce]:FM:EXTernal:COUPling?`	
Phase Modulation Subsystem	
`[:SOURce]:PM:DEViation <value>RAD` `[:SOURce]:PM:DEViation?`	**Refer to the X-Series signal generator Data Sheet for the range values.**
`[:SOURce]:PM:STATe ON|OFF` `[:SOURce]:PM:STATe?`	

`[:SOURce]:PM:SOURce`
`INTernal[1]|INTernal2|EXTernal`
 	
`[:SOURce]:PM:SOURce?`
	While the 8648A/B/C/D supports multiple source selections (e.g. `INTernal1,EXTernal`) **within a single command execution, the X-Series signal generators support only a single source selection.**

`[:SOURce]:PM:INTernal[1]|2:FREQuency`
`<vak><unit>`
 	
`[:SOURce]:PM:INTernal[1]|2:FREQuency`
`?`
	Refer to the X-Series signal generator Data Sheet for the range values.

`[:SOURce]:PM:INTernal2:FUNCtion:SHAPe`
`SINe|TRIangle|SQUare`
 	
`[:SOURce]:PM:INTernal2:FUNCtion:SHAP`
`e?`
	Supported but the following parameters are not supported: `SAW`

`[:SOURce]:PM:EXTernal:COUPling`
`AC|DC`
`[:SOURce]:PM:EXTernal:COUPling?`	

Pulse Modulation Subsystem	
`[:SOURce]:PULM:STATe ON|OFF` `[:SOURce]:PULM:STATe?`	
`:INITiate:IMMediate`	**Supported but without the** `[:SOURce]` **mnemonic, including** `:SOUR`.
`:ABORt`	**Supported but without the** `[:SOURce]` **mnemonic, including** `:SOUR`.

6 Keysight E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B Compatible Commands

Command List Overview

> **NOTE**
>
> When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following table shows the SCPI commands supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators.

> **NOTE**
>
> Some commands or subsystems may be supported only by the Keysight N5172B/82B Vector Signal Generator. These exceptions are indicated either in the Remarks for individual commands or in the subsystem headings when it applies to the whole subsystem.

Some commands may have identical syntax to the X-Series signal generator commands but the parameters (arguments) may show a difference. When this occurs, typically the X-Series command has more parameters that are also supported while using the compatible command. To compare the compatible commands with the X-Series commands, refer to the Keysight X-Series Signal Generators SCPI Command Reference.

When the command requires a range value, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

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Command List

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B SCPI Sequences

Supported Commands	Remarks
IEEE Common Commands	
`*CLS`	
`*ESE <data>` `*ESE?`	
`*ESR?`	
`*IDN?`	
`*OPC` `*OPC?`	
`*RCL <reg_num>`	
`*RST`	
`*SAV <reg_num>`	
`*SRE <data>` `*SRE?`	
`*STB?`	
`*TRG`	
`*TST?`	
`*WAI`	
Calibration Subsystem	
`:CALibration:DCFM`	
Communication Subsystem	
`:SYSTem:COMMunicate:GPIB:ADDRess <number>`	
`:SYSTem:COMMunicate:GPIB:ADDRess?`	
`:SYSTem:COMMunicate:GTLocal`	
`:SYSTem:COMMunicate:LAN:CONFig DHCP│MANual`	
`:SYSTem:COMMunicate:LAN:CONFig?`	
`:SYSTem:COMMunicate:LAN:GATeway <ipstring>`	
`:SYSTem:COMMunicate:LAN:GATeway?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`:SYSTem:COMMunicate:LAN:HOSTname <string>`	
`:SYSTem:COMMunicate:LAN:HOSTname?`	
`:SYSTem:COMMunicate:LAN:IP <ipstring>`	
`:SYSTem:COMMunicate:LAN:IP?`	
`:SYSTem:COMMunicate:LAN:SUBNet <ipstring>`	
`:SYSTem:COMMunicate:LAN:SUBNet?`	
`:SYSTem:COMMunicate:PMETer:CHANnel A|B`	**Command accepted without error but does nothing.**
`:SYSTem:COMMunicate:PMETer:CHANnel?`	**Command accepted without error but does nothing.**
`:SYSTem:COMMunicate:PMETer:IDN E4418B|E4419B|E4416A|E4417A`	**Command accepted without error but does nothing.**
`:SYSTem:COMMunicate:PMETer:IDN?`	**Command accepted without error but does nothing.**
`:SYSTem:COMMunicate:PMETer:TIMEout <num>[<time suffix>]`	**Command accepted without error but does nothing.**
`:SYSTem:COMMunicate:PMETer:TIMEout?`	**Command accepted without error but does nothing.**
Diagnostic Subsystem	
`:DIAGnostic[:CPU]:INFOrmation:CCOunt :ATTenuator?`	
`:DIAGnostic[:CPU]:INFOrmation:CCOunt :PON?`	
`:DIAGnostic[:CPU]:INFOrmation:DISPla y:OTIMe?`	
`:DIAGnostic[:CPU]:INFOrmation:LICens e:AUXiliary?`	
`:DIAGnostic[:CPU]:INFOrmation:LICens e:WAVeform?`	
`:DIAGnostic[:CPU]:INFOrmation:OPTion s?`	
`:DIAGnostic[:CPU]:INFOrmation:OPTion s:DETail?`	
`:DIAGnostic[:CPU]:INFOrmation:OTIMe?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`:DIAGnostic[:CPU]:INFOrmation:REVision?`	
`:DIAGnostic[:CPU]:INFOrmation:SDATe?`	
`:DIAGnostic[:CPU]:INFOrmation:WLICense[:VALue]? <waveformType>`	
Memory Subsystem	
`:MEMory:CATalog:BINary?`	
`:MEMory:CATalog:STATe?`	
`:MEMory:CATalog:UFLT?`	
`:MEMory:CATalog[:ALL]?`	
`:MEMory:COPY[:NAME] <"filename">,<"filename">`	
`:MEMory:DATA <"filename">,<datablock>`	
`:MEMory:DATA? <"filename">`	
`:MEMory:DATA:APPend <"filename">,<datablock>`	
`:MEMory:DELete:ALL`	
`:MEMory:DELete:BINary`	
`:MEMory:DELete:STATe`	
`:MEMory:DELete:UFLT`	
`:MEMory:DELete[:NAME] <"filename">`	
`:MEMory:FREE[:ALL]?`	
`:MEMory:LOAD:LIST <"filename">`	
`:MEMory:MOVE <src_file>,<dest_file>`	
`:MEMory:SIZE? <"filename">`	
`:MEMory:STATe:COMMent <reg_num>,<seq_num>,<"comment">`	
`:MEMory:STATe:COMMent? <reg_num>,<seq_num>`	
`:MEMory:STORe:LIST <"filename">`	
`:MMEMory:CATalog? <"msus">`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`:MMEMory:COPY` `<"filename">,<"filename">`	
`:MMEMory:DATA` `<"filename">,<datablock>`	
`:MMEMory:DATA? <"filename">`	
`:MMEMory:DELete:NVWFm`	
`:MMEMory:DELete[:NAME]` `<"filename">,[<"msus">]`	
`:MMEMory:HEADer:CLEar <filename>`	
`:MMEMory:HEADer:DESCription` `<"filename">, <"description">`	
`:MMEMory:HEADer:DESCription?` `<"filename">`	
`:MMEMory:LOAD:LIST <"filename">`	
`:MMEMory:MOVE <src_file>,<dest_file>`	
`:MMEMory:STORe:LIST <"filename">`	
Output Subsystem	
`:OUTPut:BLANking:AUTO ON|OFF|1|0` `:OUTPut:BLANking:AUTO?`	
`:OUTPut:BLANking[:STATe] ON|OFF|1|0` `:OUTPut:BLANking[:STATe]?`	
`:OUTPut:MODulation[:STATe] ON|OFF|1|0` `:OUTPut:MODulation[:STATe]?`	
`:OUTPut[:STATe] ON|OFF|1|0` `:OUTPut[:STATe]?`	
Status Subsystem	
`:STATus:OPERation:BASeband:CONDition?`	

`:STATus:OPERation:BASeband:ENABle`
`<value>`
`:STATus:OPERation:BASeband:ENABle?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
               E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`:STATus:OPERation:BASeband:NTRansiti`
`on <value>`
 	
`:STATus:OPERation:BASeband:NTRansiti`
`on?`	

`:STATus:OPERation:BASeband:PTRansiti`
`on <value>`
 	
`:STATus:OPERation:BASeband:PTRansiti`
`on?`	

`:STATus:OPERation:BASeband[:EVENt]?`	
`:STATus:OPERation:CONDition?`	
`:STATus:OPERation:ENABle <value>` `:STATus:OPERation:ENABle?`	
`:STATus:OPERation:NTRansition <value>` `:STATus:OPERation:NTRansition?`	
`:STATus:OPERation:PTRansition <value>` `:STATus:OPERation:PTRansition?`	
`:STATus:OPERation[:EVENt]?`	
`:STATus:PRESet`	

`:STATus:QUEStionable:CALibration:ENA`
`Ble <value>`
`:STATus:QUEStionable:CALibration:ENA`
`Ble?`	

`:STATus:QUEStionable:CALibration:NTR`
`ansition <value>`
 	
`:STATus:QUEStionable:CALibration:NTR`
`ansition?`	

`:STATus:QUEStionable:CALibration:PTR`
`ansition <value>`
 	
`:STATus:QUEStionable:CALibration:PTR`
`ansition?`	

`:STATus:QUEStionable:CALibration[:EV` `ENt]?`	
`:STATus:QUEStionable:CONDition?`	

`:STATus:QUEStionable:ENABle <value>`
 	
`:STATus:QUEStionable:ENABle?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`:STATus:QUEStionable:FREQuency:CONDition?`	
`:STATus:QUEStionable:FREQuency:ENABle <value>` `:STATus:QUEStionable:FREQuency:ENABle?`	
`:STATus:QUEStionable:FREQuency:NTRansition <value>` `:STATus:QUEStionable:FREQuency:NTRansition?`	
`:STATus:QUEStionable:FREQuency:PTRansition <value>` `:STATus:QUEStionable:FREQuency:PTRansition?`	
`:STATus:QUEStionable:FREQuency[:EVENt]?`	
`:STATus:QUEStionable:NTRansition <value>` `:STATus:QUEStionable:NTRansition?`	
`:STATus:QUEStionable:POWer:CONDition?`	
`:STATus:QUEStionable:POWer:ENABle <value>` `:STATus:QUEStionable:POWer:ENABle?`	
`:STATus:QUEStionable:POWer:NTRansition <value>` `:STATus:QUEStionable:POWer:NTRansition?`	
`:STATus:QUEStionable:POWer:PTRansition <value>` `:STATus:QUEStionable:POWer:PTRansition?`	
`:STATus:QUEStionable:POWer[:EVENt]?`	
`:STATus:QUEStionable:PTRansition <value>` `:STATus:QUEStionable:PTRansition?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`:STATus:QUEStionable[:EVENt]?`	
System Subsystem	

`:SYSTem:ALTernate <reg num>`
 	
`:SYSTem:ALTernate? [MAXimum|MINimum]`
	The range is dependent upon the X-Series signal generator model.

`:SYSTem:ALTernate:STATe ON|OFF|1|0` `:SYSTem:ALTernate:STATe?`	
`:SYSTem:CAPability?`	
`:SYSTem:DATE <year>,<month>,<day>` `:SYSTem:DATE?`	

`:SYSTem:ERRor:SCPI[:SYNTax]`
`ON|OFF|1|0`
`:SYSTem:ERRor:SCPI[:SYNTax]?`	

`:SYSTem:ERRor[:NEXT]?`	
`:SYSTem:HELP:MODE SINGle`	**Supported but the following parameter is not supported:** `CONTinuous` **Supported but the following query is not supported:** `:SYSTem:HELP:MODE?`
`:SYSTem:IDN "string"`	

`:SYSTem:LANGuage`
`"SCPI"|"COMP"|"8648"|"8662"|"8663"`
`:SYSTem:LANGuage?`
	Supported but the following parameters are not supported:
	`"8340"|"8360"|"83712"|"83732"|"83752"|"8757"`

`:SYSTem:OPT "string"`	
`:SYSTem:PON:TYPE PRESet|LAST` `:SYSTem:PON:TYPE?`	
`:SYSTem:PRESet`	**Always performs the same action as the** Preset **hardkey.** **For related** Preset **hardkey information, refer to** ":SYSTem:PRESet:TYPE NORMal|USER :SYSTem:PRESet:TYPE?" on page 57
`:SYSTem:PRESet:ALL`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`:SYSTem:PRESet:LANGuage`
`"SCPI"|"COMP"|"8662"|"8663"`
`:SYSTem:PRESet:LANGuage?`
	Supported but the following parameters are not supported:
	`"8340"|"8360"|"83712"|"83732"|"83752"|"8757"`

`:SYSTem:PRESet:PERSistent`	
`:SYSTem:PRESet:TYPE NORMal|USER` `:SYSTem:PRESet:TYPE?`	**This command toggles the** Preset **hardkey state between factory- and user-defined conditions.** **The setting enabled by this command is not affected by signal generator power-on, preset, or** `*RST`. **NOTE** **If the** Preset **hardkey is not responding correctly, using the SCPI command** `:SYSTem:PRESet:TYPE NORMal` **will return the** Preset **hardkey to its default factory behavior.**
`:SYSTem:PRESet[:USER]:SAVE`	
`:SYSTem:SECurity:DISPlay` `ON|OFF|{1}|0:SYSTem:SECurity:DISPlay?`	

`:SYSTem:SECurity:DISPlay:RESTricted`
`ON|OFF|{1}|0`
`:SYSTem:SECurity:DISPlay:RESTricted?`	

`:SYSTem:SECurity:ERASeall`	

`:SYSTem:SECurity:LEVel`
`{NONE}|ERASe|OVERwrite|SANitize`
`:SYSTem:SECurity:LEVel?`	

`:SYSTem:SECurity:LEVel:STATe`
`ON|OFF|1|0`
`:SYSTem:SECurity:LEVel:STATe?`	

`:SYSTem:SECurity:OVERwrite`	
`:SYSTem:SECurity:SANitize`	
`:SYSTem:SSAVer:DELay <value>` `:SYSTem:SSAVer:DELay?`	
`:SYSTem:SSAVer:MODE LIGHt|TEXT` `:SYSTem:SSAVer:MODE?`	
`:SYSTem:SSAVer:STATe ON|OFF` `:SYSTem:SSAVer:STATe?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
:SYSTem:TIME <hour>,<minute>,<second> :SYSTem:TIME?	
:SYSTem:VERSion?	
Trigger Subsystem	
:ABORt	
:INITiate:CONTinuous[:ALL] ON|OFF|1|0 :INITiate:CONTinuous[:ALL]?	
:INITiate[:IMMediate][:ALL]	
:TRIGger:OUTPut:POLarity POSitive|NEGative :TRIGger:OUTPut:POLarity?	
:TRIGger[:SEQuence]:SLOPe POSitive|NEGative :TRIGger[:SEQuence]:SLOPe?	
:TRIGger[:SEQuence]:SOURce BUS|IMMediate|EXTernal|KEY :TRIGger[:SEQuence]:SOURce?	
:TRIGger[:SEQuence][:IMMediate]	
[:SOURce]:TSWeep	
Unit Subsystem	
:UNIT:POWer DBM|DBUV|DBUVEMF|V|VEMF|DB :UNIT:POWer?	
Amplitude Modulation Subsystem	
[:SOURce]:AM:INTernal:FREQuency:STEP [:INCRement] <num> [:SOURce]:AM:INTernal:FREQuency:STEP [:INCRement]?	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:AM:MODE DEEP	
[:SOURce]:AM:MODE NORMal [:SOURce]:AM:MODE?	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling AC|DC`
 	
`[:SOURce]:AM[1]|2:EXTernal[1]|2:COUPling?`	

`[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance <50|600>`
 	
`[:SOURce]:AM[1]|2:EXTernal[1]|2:IMPedance?`
	Parameters differ from the N51xxB command.

`[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe SINE|TRIangle|SQUare`
 	
`[:SOURce]:AM[1]|2:INTernal[1]|2:FUNCtion:SHAPe?`
	Supported but the following parameters are not supported:
	`RAMP|NOISe|DUALsine|SWEPtsine`

`[:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency <value><unit>|UP|DOWN`
 	
`[:SOURce]:AM[1]|2:INTernal[1]|2:FREQuency?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:AM[1]|2:POLarity NORMal|INVerted`
 	
`[:SOURce]:AM[1]|2:POLarity?`	

`[:SOURce]:AM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2`
 	
`[:SOURce]:AM[1]|2:SOURce?`	

`[:SOURce]:AM[1]|2:STATe ON|OFF|1|0`
 	
`[:SOURce]:AM[1]|2:STATe?`	

`[:SOURce]:AM[1]|2:TYPE LINear|EXPonential`
 	
`[:SOURce]:AM[1]|2:TYPE?`	

`[:SOURce]:AM[1]|2[:DEPTh][:LINear] <value><unit>|UP|DOWN`
 	
`[:SOURce]:AM[1]|2[:DEPTh][:LINear]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:AM[:DEPTh]:STEP[:INCRement] <value><unit>`
 	
`[:SOURce]:AM[:DEPTh]:STEP[:INCRement]?`
	The range is dependent upon the X-Series signal generator model.

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
Frequency Subsystem	

`[:SOURce]:FREQuency:CENTer`
`<num>[<freq`
`suffix>]|MAXimum|MINimum|UP|DOWN`
 	
`[:SOURce]:FREQuency:CENTer?`
`[MAXimum|MINimum]`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency:FIXed`
`<value><unit> |UP|DOWN`
 	
`[:SOURce]:FREQuency:FIXed?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency:MODE`
`FIXed|CW|SWEep|LIST`
 	
`[:SOURce]:FREQuency:MODE?`	

`[:SOURce]:FREQuency:MULTiplier`
`<value`
 	
`[:SOURce]:FREQuency:MULTiplier?`	

`[:SOURce]:FREQuency:OFFSet`
`<value><unit>`
 	
`[:SOURce]:FREQuency:OFFSet?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency:OFFSet:STATe`
`ON|OFF`
 	
`[:SOURce]:FREQuency:OFFSet:STATe?`	

`[:SOURce]:FREQuency:REFerence`
`<value><unit>`
 	
`[:SOURce]:FREQuency:REFerence?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency:REFerence:SET`	

`[:SOURce]:FREQuency:REFerence:STATe`
`ON|OFF|1|0`
 	
`[:SOURce]:FREQuency:REFerence:STATe?`	

`[:SOURce]:FREQuency:SPAN <num>[<freq`
`suffix>]|MAXimum|MINimum|UP|DOWN`
 	
`[:SOURce]:FREQuency:SPAN?`
`[MAXimum|MINimum]`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency:STARt`
`<value><unit>`
 	
`[:SOURce]:FREQuency:STARt?`
	The range is dependent upon the X-Series signal generator model.

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                   E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:FREQuency:STOP`
`<value><unit>`
 	
`[:SOURce]:FREQuency:STOP?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency[:CW]`
`<value><unit> |UP|DOWN`
 	
`[:SOURce]:FREQuency[:CW]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency[:CW]:STEP[:INCRe`
`ment] <value><unit>`
 	
`[:SOURce]:FREQuency[:CW]:STEP[:INCRe`
`ment]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FREQuency[:FIXed]:STEP[:IN`
`CRement] <value><unit>`
 	
`[:SOURce]:FREQuency[:FIXed]:STEP[:IN`
`CRement]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:PHASe:REFerence`	

`[:SOURce]:PHASe[:ADJust]`
`<value><unit>`
 	
`[:SOURce]:PHASe[:ADJust]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:ROSCillator:BANDwidth:EXTe`
`rnal <value>`
 	
`[:SOURce]:ROSCillator:BANDwidth:EXTe`
`rnal?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:ROSCillator:SOURce?`	

`[:SOURce]:ROSCillator:SOURce:AUTO`
`ON|OFF|1|0`
 	
`[:SOURce]:ROSCillator:SOURce:AUTO?`	

Frequency Modulation Subsystem	

`[:SOURce]:FM[1]|2:EXTernal[1]|2:COUP`
`ling AC|DC`
 	
`[:SOURce]:FM[1]|2:EXTernal[1]|2:COUP`
`ling?`	

`[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPe`
`dance <50|600>`
 	
`[:SOURce]:FM[1]|2:EXTernal[1]|2:IMPe`
`dance?`
	Command accepted without error but does nothing.

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:FM:INTernal:FREQuency:STEP [:INCRement] <num>`
 	
`[:SOURce]:FM:INTernal:FREQuency:STEP [:INCRement]?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FM[1]|2:INTernal[1]:FUNCti on:SHAPe SINE|TRIangle|SQUare`
 	
`[:SOURce]:FM[1]|2:INTernal[1]:FUNCti on:SHAPe?`
	Supported but the following parameters are not supported: `RAMP|NOISe|DUALsine|SWEPtsine`

`[:SOURce]:FM[1]|2:INTernal[1]|2:FREQ uency <value><unit>`
 	
`[:SOURce]:FM[1]|2:INTernal[1]|2:FREQ uency?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:FM[1]|2:SOURce INT[1]|INT2|EXT[1]|EXT2`
 	
`[:SOURce]:FM[1]|2:SOURce?`	

`[:SOURce]:FM[1]|2:STATe ON|OFF|1|0`
 	
`[:SOURce]:FM[1]|2:STATe?`	

`[:SOURce]:FM[1]|2[:DEViation] <value><unit>`
 	
`[:SOURce]:FM[1]|2[:DEViation]?`
	The range is dependent upon the X-Series signal generator model.

List/Sweep Subsystem	
`[:SOURce]:LIST:CPOint?`	

`[:SOURce]:LIST:DIRection UP|DOWN`
 	
`[:SOURce]:LIST:DIRection?`	

`[:SOURce]:LIST:DWELl <value>{,<value>}`
 	
`[:SOURce]:LIST:DWELl?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:LIST:DWELl:POINts?`	

`[:SOURce]:LIST:DWELl:TYPE LIST|STEP`
 	
`[:SOURce]:LIST:DWELl:TYPE?`	

`[:SOURce]:LIST:FREQuency <value>{,<value>}`
 	
`[:SOURce]:LIST:FREQuency?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:LIST:FREQuency:POINts?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:LIST:MANual <value>|UP|DOWN`
 	
`[:SOURce]:LIST:MANual?`	

`[:SOURce]:LIST:MODE AUTO|MANual`
 	
`[:SOURce]:LIST:MODE?`	

`[:SOURce]:LIST:POWer`
`<value>{,<value>}`
 	
`[:SOURce]:LIST:POWer?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:LIST:POWer:POINts?`	

`[:SOURce]:LIST:RETRace ON|OFF|0|1`
 	
`[:SOURce]:LIST:RETRace?`	

`[:SOURce]:LIST:TRIGger:SOURce`
`BUS|IMMediate|EXTernal|KEY`
 	
`[:SOURce]:LIST:TRIGger:SOURce?`	

`[:SOURce]:LIST:TYPE LIST|STEP`
 	
`[:SOURce]:LIST:TYPE?`	

`[:SOURce]:LIST:TYPE:LIST:INITialize:` `FSTep`	
`[:SOURce]:LIST:TYPE:LIST:INITialize:` `PRESet`	
`[:SOURce]:SWEep:CPOint?`	

`[:SOURce]:SWEep:DWELl <value>`
 	
`[:SOURce]:SWEep:DWELl?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:SWEep:GENeration`
`ANALog|STEPped`
 	
`[:SOURce]:SWEep:GENeration?`
	Command accepted without error but does nothing.

`[:SOURce]:SWEep:MODE AUTO|MANual`
 	
`[:SOURce]:SWEep:MODE?`	

`[:SOURce]:SWEep:POINts <value>`
 	
`[:SOURce]:SWEep:POINts?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:SWEep:SPACing`
`LINear|LOGarithmic`
`[:SOURce]:SWEep:SPACing?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:SWEep:TIME 10mS - 99S`
 	
`[:SOURce]:SWEep:TIME?`	

`[:SOURce]:SWEep:TIME:AUTO ON|OFF|0|1`
 	
`[:SOURce]:SWEep:TIME:AUTO?`	

Phase Modulation Subsystem	

`[:SOURce]:PM:INTernal:FREQuency:STEP`
`[:INCRement]`
 	
`[:SOURce]:PM:INTernal:FREQuency:STEP`
`[:INCRement]?`	

`[:SOURce]:PM[1]|2:BANDwidth|BWIDth`
`NORMal|HIGH`
 	
`[:SOURce]:PM[1]|2:BANDwidth|BWIDth?`	

`[:SOURce]:PM[1]|2:EXTernal[1]:COUPli`
`ng AC|DC`
 	
`[:SOURce]:PM[1]|2:EXTernal[1]:COUPli`
`ng?`	

`[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPe`
`dance <50|600>`
 	
`[:SOURce]:PM[1]|2:EXTernal[1]|2:IMPe`
`dance?`
	Parameters differ from the N51xxB command.

`[:SOURce]:PM[1]|2:INTernal[1]|2:FREQ`
`uency <value><unit>`
 	
`[:SOURce]:PM[1]|2:INTernal[1]|2:FREQ`
`uency?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:PM[1]|2:INTernal[1]:FUNCti`
`on:SHAPe SINE|TRIangle|SQUare`
 	
`[:SOURce]:PM[1]|2:INTernal[1]:FUNCti`
`on:SHAPe?`
	Supported but the following parameters are not supported: `RAMP|NOISe|DUALsine|SWEPtsine`

`[:SOURce]:PM[1]|2:SOURce`
`INT[1]|INT2|EXT[1]|EXT2`
 	
`[:SOURce]:PM[1]|2:SOURce?`	

`[:SOURce]:PM[1]|2:STATe ON|OFF|1|0`
 	
`[:SOURce]:PM[1]|2:STATe?`	

`[:SOURce]:PM[1]|2[:DEViation]`
`<value><unit>`
 	
`[:SOURce]:PM[1]|2[:DEViation]?`
	The range is dependent upon the X-Series signal generator model.

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:PM[:DEViation]:STEP[:INCRement] <value><unit>`
 	
`[:SOURce]:PM[:DEViation]:STEP[:INCRement]?`
	Refer to the "Keysight X-Series Signal Generators SCPI Command Reference" for the range values.

Power Subsystem	

`[:SOURce]:POWer:ALC:BANDwidth|BWIDth <num>[freq suffix]`
 	
`[:SOURce]:POWer:ALC:BANDwidth|BWIDth ?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:POWer:ALC:BANDwidth|BWIDth :AUTO ON|OFF|1|0`
 	
`[:SOURce]:POWer:ALC:BANDwidth|BWIDth :AUTO?`	

`[:SOURce]:POWer:ALC:LEVel <value>dB`
 	
`[:SOURce]:POWer:ALC:LEVel?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:POWer:ALC:SEARch:REFerence FIXed|MODulated|MANual|MODulated`
 	
`[:SOURce]:POWer:ALC:SEARch:REFerence ?`
	Supported on the N5166B/72B/82B only.

`[:SOURce]:POWer:ALC:SEARch:REFerence :LEVel <value>` `[:SOURce]:POWer:ALC:SEARch:REFerence :LEVel?`	**Supported on the N5166B/72B/82B Only.** *The range is dependent upon the X-Series signal generator model.*

`[:SOURce]:POWer:ALC:SEARch:SPAN:POINts <value>`
 	
`[:SOURce]:POWer:ALC:SEARch:SPAN:POINts?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:POWer:ALC:SEARch:SPAN:STARt <value><units>`
 	
`[:SOURce]:POWer:ALC:SEARch:SPAN:STARt?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:POWer:ALC:SEARch:SPAN:STOP <value><units>`
 	
`[:SOURce]:POWer:ALC:SEARch:SPAN:STOP?`
	The range is dependent upon the X-Series signal generator model.

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE FULL|USER`
 	
`[:SOURce]:POWer:ALC:SEARch:SPAN:TYPE ?`	

`[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe] ON|OFF|1|0`
 	
`[:SOURce]:POWer:ALC:SEARch:SPAN[:STATe]?`	

`[:SOURce]:POWer:ALC:SOURce INTernal|DIODe`
 	
`[:SOURce]:POWer:ALC:SOURce?`
	Supported on the N5182B only. But the following parameter is not supported: `MMHead`.

`[:SOURce]:POWer:ALC[:STATe] ON|OFF|1|0`
 	
`[:SOURce]:POWer:ALC[:STATe]?`	

`[:SOURce]:POWer:ATTenuation <value><unit>`
 	
`[:SOURce]:POWer:ATTenuation?`	

`[:SOURce]:POWer:ATTenuation:AUTO ON|OFF|1|0`
 	
`[:SOURce]:POWer:ATTenuation:AUTO?`	

`[:SOURce]:POWer:MODE FIXed|LIST|SWEep`
 	
`[:SOURce]:POWer:MODE?`	

`[:SOURce]:POWer:PROTection[:STATe] ON|OFF|1|0`
 	
`[:SOURce]:POWer:PROTection[:STATe]?`	

`[:SOURce]:POWer:REFerence <value><unit>`
 	
`[:SOURce]:POWer:REFerence?`	

`[:SOURce]:POWer:REFerence:STATe ON|OFF|1|0`
 	
`[:SOURce]:POWer:REFerence:STATe?`	

`[:SOURce]:POWer:STARt <value><unit>`
 	
`[:SOURce]:POWer:STARt?`	

`[:SOURce]:POWer:STOP <value><unit>`
 	
`[:SOURce]:POWer:STOP?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet <value><unit>`
 	
`[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet?`	

`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude] <value><unit> |UP|DOWN`
 	
`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]?`	

`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] <value>`
 	
`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?`	

Pulse Modulation Subsystem	

`[:SOURce]:PULM:EXTernal:POLarity NORMal|INVerted`
 	
`[:SOURce]:PULM:EXTernal:POLarity?`	

`[:SOURce]:PULM:INTernal[1]:DELay <delay>|UP|DOWN`
 	
`[:SOURce]:PULM:INTernal[1]:DELay? [UP|DOWN]`	

`[:SOURce]:PULM:INTernal[1]:DELay:STEP <step>`
 	
`[:SOURce]:PULM:INTernal[1]:DELay:STEP?`	

`[:SOURce]:PULM:INTernal[1]:FREQuency <frequency>|MAXimum|MINimum|UP|DOWN`
 	
`[:SOURce]:PULM:INTernal[1]:FREQuency?`	

`[:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement] <freq>|MAXimum|MINimum|DEFault`
 	
`[:SOURce]:PULM:INTernal[1]:FREQuency:STEP[:INCRement]? [MIN|MAX|DEF]`	

`[:SOURce]:PULM:INTernal[1]:PERiod <period>|MAXimum|MINimum|UP|DOWN`
 	
`[:SOURce]:PULM:INTernal[1]:PERiod?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
              E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement] <step>|UP|DOWN`
 	
`[:SOURce]:PULM:INTernal[1]:PERiod:STEP[:INCRement]?`	

`[:SOURce]:PULM:INTernal[1]:PWIDth <width>`
 	
`[:SOURce]:PULM:INTernal[1]:PWIDth?`	

`[:SOURce]:PULM:INTernal[1]:PWIDth:STEP <step>|DEFault|MAXimum|MINimum`
 	
`[:SOURce]:PULM:INTernal[1]:PWIDth:STEP?`	

`[:SOURce]:PULM:SOURce INT|EXT`
 	
`[:SOURce]:PULM:SOURce?`
	Supported but the following parameter is not supported: `SCALar`

`[:SOURce]:PULM:SOURce:INTernal SQUare|FRUN|TRIGgered|DOUBlet|GATEd`
 	
`[:SOURce]:PULM:SOURce:INTernal?`	

`[:SOURce]:PULM:STATe ON|OFF|1|0`
 	
`[:SOURce]:PULM:STATe?`	

All Subsystem	
`[:SOURce]:RADio:ALL:OFF`	
AWGN Real Time Subsystem (This subsystem is supported on the N5166B/72B/82B only.)	
`[:SOURce]:RADio:AWGN:RT:BWIDth <val>` `[:SOURce]:RADio:AWGN:RT:BWIDth?`	
`[:SOURce]:RADio:AWGN:RT[:STATe] ON|OFF|1|0` `[:SOURce]:RADio:AWGN:RT[:STATe]?`	
Dmodulation Subsystem (This subsystem supported on the N5166B/72B/82B only.)	
`[:SOURce]:RADio:DMODulation:ARB:FILTer RNYQuist|NYQuist|GAUSsian|RECTangle|IS95|IS95_EQ|IS95_MOD|IS95_MOD_EQ|WCDMa|AC4Fm|IS2000SR3DS|UGGaussian|"user FIR"` `[:SOURce]:RADio:DMODulation:ARB:FILTer?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa <value>` `[:SOURce]:RADio:DMODulation:ARB:FILTer:ALPHa?`	
`[:SOURce]:RADio:DMODulation:ARB:FILTer:BBT <value>` `[:SOURce]:RADio:DMODulation:ARB:FILTer:BBT?`	
`[:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel EVM|ACP` `[:SOURce]:RADio:DMODulation:ARB:FILTer:CHANnel?`	
`[:SOURce]:RADio:DMODulation:ARB:HEADer:CLEar`	
`[:SOURce]:RADio:DMODulation:ARB:HEADer:SAVE`	
`[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer 40e6|THRough` `[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer?`	**Command accepted on the N5166B/72B/82B without error but does nothing.**
`[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO ON|OFF|1|0` `[:SOURce]:RADio:DMODulation:ARB:IQ:EXTernal:FILTer:AUTO?`	
`[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen <val><unit>` `[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen?`	
`[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0` `[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:ATTen:AUTO?`	
`[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough` `[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer?`	**Command accepted on the N5166B/72B/82B without error but does nothing.**

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
[:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0 [:SOURce]:RADio:DMODulation:ARB:IQ:MODulation:FILTer:AUTO?	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:ALCHold?	
[:SOURce]:RADio:DMODulation:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4 [:SOURce]:RADio:DMODulation:ARB:MDEStination:PULSe?	
[:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh] <0% - {100%}> [:SOURce]:RADio:DMODulation:ARB:MODulation:ASK[:DEPTh]?	
[:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation] <val><unit> [:SOURce]:RADio:DMODulation:ARB:MODulation:FSK[:DEViation]?	
[:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE] ASK|BPSK|QPSK|IS95QPSK|GRAYQPSK|OQPSK|IS95OQPSK|P4DQPSK|PSK8|PSK16|D8PSK|EDGE|MSK|FSK2|FSK4|FSK8|FSK16|C4FM|QAM4|QAM16|QAM32|QAM64|QAM128|QAM256 [:SOURce]:RADio:DMODulation:ARB:MODulation[:TYPE]?	
[:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4 NEGative|{POSitive} [:SOURce]:RADio:DMODulation:ARB:MPOLarity:MARKer1|2|3|4?	
[:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency <value> [:SOURce]:RADio:DMODulation:ARB:REFerence:EXTernal:FREQuency?	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce] INTernal|EXTernal` `[:SOURce]:RADio:DMODulation:ARB:REFerence[:SOURce]?`	
`[:SOURce]:RADio:DMODulation:ARB:RETRigger ON|OFF|IMMediate` `[:SOURce]:RADio:DMODulation:ARB:RETRigger?`	
`[:SOURce]:RADio:DMODulation:ARB:SCLock:RATE <1Hz – 1.0e8 kHz {1.0e8 kHz}>` `[:SOURce]:RADio:DMODulation:ARB:SCLock:RATE?`	

`[:SOURce]:RADio:DMODulation:ARB:SETup`
`GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|MCARrier|"file name"`
`[:SOURce]:RADio:DMODulation:ARB:SETup?`	

`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier`
`(GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa,<num carriers>,<freq spacing>) | "file name"`
`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier?`	

`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe {FIXed}|RANDom` `[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:PHASe?`	
`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:STORe "file name"`	

Table 6-1   **Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)**

Supported Commands	Remarks

`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe`
`INIT|APPend|<carrier_num>,GSM|NADC|PDC|PHS|DECT|AC4Fm|ACQPsk|CDPD|PWT|EDGE|TETRa|"file name",<freq_offset>,<power>`
`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe? <carrier_num>`	

`[:SOURce]:RADio:DMODulation:ARB:SETup:MCARrier:TABLe:NCARriers?`	

`[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE :CONTinuous[:TYPE]`
`FREE|TRIGger|RESet`
`[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE :CONTinuous[:TYPE]?`	

`[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE CONTinuous|SINGle|GATE` `[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE?`	
`[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE LOW|HIGH` `[:SOURce]:RADio:DMODulation:ARB:TRIGger:TYPE:GATE?`	
`[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce] KEY|BUS|EXT` `[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]?`	
`[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay <value>` `[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay?`	

`[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe`
`ON|OFF|1|0`
`[:SOURce]:RADio:DMODulation:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:RADio:DMODulation:ARB:TRIG`
`ger[:SOURce]:EXTernal:SLOPe`
`POSitive|NEGative`
`[:SOURce]:RADio:DMODulation:ARB:TRIG`
`ger[:SOURce]:EXTernal:SLOPe?`	

`[:SOURce]:RADio:DMODulation:ARB:TRIG`
`ger[:SOURce]:EXTernal[:SOURce]`
`EPT1|EPT2|EPTRIGGER1|EPTRIGGER2`
`[:SOURce]:RADio:DMODulation:ARB:TRIG`
`ger[:SOURce]:EXTernal[:SOURce]?`	

`[:SOURce]:RADio:DMODulation:ARB[:STA`
`Te] ON|OFF|1|0`
`[:SOURce]:RADio:DMODulation:ARB[:STA`
`Te]?`	

Digital Modulation Subsystem (This subsystem supported on the N5166B/72B/82B only.)	
`[:SOURce]:DM:EXTernal:FILTer` `40e6|THRough`	**Commands are accepted without error by the signal generator, but no action occurs. But the following query is not supported:** `[:SOURce]:DM:EXTernal:FILTer?`
`[:SOURce]:DM:EXTernal:FILTer:AUTO` `ON|OFF|1|0`	**Supported but the following query is not supported:** `[:SOURce]:DM:EXTernal:FILTer:AUTO?`

`[:SOURce]:DM:EXTernal:POLarity`
`NORMal|INVert|INVerted`
 	
`[:SOURce]:DM:EXTernal:POLarity?`	

`[:SOURce]:DM:EXTernal:SOURce`
`EXTernal|INTernal|BBG1|OFF|SUM`
 	
`[:SOURce]:DM:EXTernal:SOURce?`
	Supported but the following parameters are not supported: |BBG2|BBG3|BBG4|EXT600|

`[:SOURce]:DM:IQADjustment:BBG[1]|2:D`
`ELay <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:BBG[1]|2:D`
`ELay?`	

`[:SOURce]:DM:IQADjustment:BBG[1]|2:D`
`ELay:EVENts ON|OFF|1|0`
 	
`[:SOURce]:DM:IQADjustment:BBG[1]|2:D`
`ELay:EVENts?`	

`[:SOURce]:DM:IQADjustment:BBG[1]|2:S`
`KEW:PATH {RF}|BB`
 	
`[:SOURce]:DM:IQADjustment:BBG[1]|2:S`
`KEW:PATH?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:DM:IQADjustment:BBG[1]|2:S KEW[:DELay] <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:BBG[1]|2:S KEW[:DELay]?`	

`[:SOURce]:DM:IQADjustment:EXTernal:C OFFset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:EXTernal:C OFFset?`	

`[:SOURce]:DM:IQADjustment:EXTernal:D IOFfset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:EXTernal:D IOFfset?`	

`[:SOURce]:DM:IQADjustment:EXTernal:D QOFfset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:EXTernal:D QOFfset?`	

`[:SOURce]:DM:IQADjustment:EXTernal:I OFFset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:EXTernal:I OFFset?`	

`[:SOURce]:DM:IQADjustment:EXTernal:Q OFFset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:EXTernal:Q OFFset?`	

`[:SOURce]:DM:IQADjustment:GAIN?` `[:SOURce]:DM:IQADjustment:GAIN[1|2] <value><unit>`	

`[:SOURce]:DM:IQADjustment:IOFFset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:IOFFset?`	

`[:SOURce]:DM:IQADjustment:QOFFset <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:QOFFset?`	

`[:SOURce]:DM:IQADjustment:QSKew <value><unit>`
 	
`[:SOURce]:DM:IQADjustment:QSKew?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:DM:IQADjustment[:STATe]`
`ON|OFF|1|0`
 	
`[:SOURce]:DM:IQADjustment[:STATe]?`	

`[:SOURce]:DM:MODulation:ATTen`
`<value><unit>`
 	
`[:SOURce]:DM:MODulation:ATTen?`	

`[:SOURce]:DM:MODulation:ATTen:AUTO`
`ON|OFF|1|0`
 	
`[:SOURce]:DM:MODulation:ATTen:AUTO?`	

`[:SOURce]:DM:MODulation:ATTen:EXTern`
`al DEFault|MANual|MEASure`
 	
`[:SOURce]:DM:MODulation:ATTen:EXTern`
`al?`	

`[:SOURce]:DM:MODulation:ATTen:EXTern`
`al:LEVel <value> <volt_units>`
 	
`[:SOURce]:DM:MODulation:ATTen:EXTern`
`al:LEVel?`	

`[:SOURce]:DM:MODulation:ATTen:EXTern` `al:LEVel:MEASurement`	

`[:SOURce]:DM:MODulation:ATTen:OPTimi`
`ze:BANDwidth <value> <bw_rate_units>`
 	
`[:SOURce]:DM:MODulation:ATTen:OPTimi`
`ze:BANDwidth?`	

`[:SOURce]:DM:MODulation:FILTer` `THRough`	**Supported but the following query generates an** `error: –113, Undefined header:` `[:SOURce]:DM:MODulation:FILTer?`

`[:SOURce]:DM:MODulation:FILTer:AUTO`
`ON|OFF|1|0|2.1e6|40e6|`
`[:SOURce]:DM:MODulation:FILTer:AUTO?`
	Commands are accepted by the signal generator, but no action is taken. (An `error –113, Undefined header` **will be displayed on the signal generator.**)

`[:SOURce]:DM:POLarity[:ALL]`
`NORMal|INVert|INVerted`
`[:SOURce]:DM:POLarity?`	

`[:SOURce]:DM:SKEW[:STATe]`
`ON|OFF|1|0|`
`[:SOURce]:DM:SKEW[:STATe]?`	

`[:SOURce]:DM:SOURce[1]|2`
`EXTernal|INTernal|BBG1|OFF`
`[:SOURce]:DM:SOURce?`
	Supported but the following parameters are not supported: `|BBG2|BBG3|BBG4|EXT600|`

Table 6-1　　　Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:DM:SRATio <value><unit>`
 	
`[:SOURce]:DM:SRATio?`	

`[:SOURce]:DM:STATe ON|OFF|1|0`
 	
`[:SOURce]:DM:STATe?`	

Display Subsystem	

`:DISPlay:ANNotation:AMPLitude:UNIT`
`DBM|DBUV|DBUVEMF|V|VEMF|DB`
 	
`:DISPlay:ANNotation:AMPLitude:UNIT?`	

`:DISPlay:ANNotation:CLOCk:DATE:FORMa`
`t MDY|DMY`
 	
`:DISPlay:ANNotation:CLOCk:DATE:FORMa`
`t?`	

`:DISPlay:ANNotation:CLOCk[:STATe]`
`ON|OFF|1|0`
 	
`:DISPlay:ANNotation:CLOCk[:STATe]?`	

`:DISPlay:BRIGhtness <value>`
 	
`:DISPlay:BRIGhtness?`	

`:DISPlay:CAPTure`	

`:DISPlay:CONTrast <value>`
 	
`:DISPlay:CONTrast?`	

`:DISPlay:INVerse ON|OFF|1|0`	**Supported but the following query is not supported:** `:DISPlay:INVerse?`

`:DISPlay:REMote ON|OFF|1|0`
 	
`:DISPlay:REMote?`	

`:DISPlay[:WINDow][:STATe] ON|OFF|1|0`
 	
`:DISPlay[:WINDow][:STATe]?`	

Dual ARB Subsystem (This subsystem supported on the N5166B/72B/82B only.)	

`[:SOURce]:RADio:ARB:BASEband:FREQuen`
`cy:OFFSet <value>`
`[:SOURce]:RADio:ARB:BASEband:FREQuen`
`cy:OFFSet?`	

`[:SOURce]:RADio[1]:ARB:CLIPping`
`"filename",IJQ|IORQ,<10-100%>[,<10-1`
`00%>]`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio[1]:ARB:DACS:ALIGn`	
`[:SOURce]:RADio[1]:ARB:GENerate:SINE ["filename"],[<osr>],[<scale>],[I|Q| {IQ}]`	
`[:SOURce]:RADio[1]:ARB:HEADer:CLEar`	

`[:SOURce]:RADio[1]:ARB:HEADer:RMS <"filename">, <rms:0 - 1.414213562373095>|UNSPecified`
 	
`[:SOURce]:RADio[1]:ARB:HEADer:RMS? <"filename">`	

`[:SOURce]:RADio[1]:ARB:HEADer:SAVE`	
`[:SOURce]:RADio[1]:ARB:IQ:EXTernal:F ILTer 40e6|THRough`	**Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an** `Error: -113, Undefined header:` `[:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer?`
`[:SOURce]:RADio[1]:ARB:IQ:EXTernal:F ILTer:AUTO ON|OFF|1|0`	**Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an** `Error: -113, Undefined header:` `[:SOURce]:RADio[1]:ARB:IQ:EXTernal:FILTer: AUTO?`

`[:SOURce]:RADio[1]:ARB:IQ:MODulation :ATTen <value><unit>`
 	
`[:SOURce]:RADio[1]:ARB:IQ:MODulation :ATTen?`	

`[:SOURce]:RADio[1]:ARB:IQ:MODulation :ATTen:AUTO ON|OFF|1|0`
 	
`[:SOURce]:RADio[1]:ARB:IQ:MODulation :ATTen:AUTO?`	

`[:SOURce]:RADio[1]:ARB:IQ:MODulation :FILTer 2.1e6|40e6|THRough`	**Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an** `Error: -113, Undefined header:` `[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTe r?`

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0`	**Commands are accepted by the signal generator, but no action is taken. But the following query is not supported and generates an** `Error: -113, Undefined header:` `[:SOURce]:RADio[1]:ARB:IQ:MODulation:FILTer:AUTO?`
`[:SOURce]:RADio[1]:ARB:MARKer:CLEar "filename",<mkr(1|2|3|4)>,<first_Point>,<last_point>`	
`[:SOURce]:RADio[1]:ARB:MARKer:CLEar:ALL "filename",<mkr(1|2|3|4)>`	
`[:SOURce]:RADio[1]:ARB:MARKer:ROTate "filename",<rotate_count>`	
`[:SOURce]:RADio[1]:ARB:MARKer:[SET] "filename",<mkr(1|2|3|4)>,<first_Point>,<last_point>,<skip_count>`	

`[:SOURce]:RADio[1]:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4`
 	
 `[:SOURce]:RADio[1]:ARB:MDEStination:ALCHold?`	

`[:SOURce]:RADio[1]:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4`
 	
 `[:SOURce]:RADio[1]:ARB:MDEStination:PULSe?`	

`[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer1 NEGative|{POSitive}`
 	
 `[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer1?`	

`[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer2 NEGative|{POSitive}`
 	
 `[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer2?`	

`[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer3 NEGative|{POSitive}`
 	
 `[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer3?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer4 NEGative|{POSitive}`
 	
`[:SOURce]:RADio[1]:ARB:MPOLarity:MARKer4?`	

`[:SOURce]:RADio[1]:ARB:NOISe:BFACtor <1 - 2 {1}>`
 	
`[:SOURce]:RADio[1]:ARB:NOISe:BFACtor ?`	

`[:SOURce]:RADio[1]:ARB:NOISe:CBWidth <1Hz-80Mhz {1Hz}>`
 	
`[:SOURce]:RADio[1]:ARB:NOISe:CBWidth ?`	

`[:SOURce]:RADio[1]:ARB:NOISe:CN <-100dB - 100dB {0dB}>`
 	
`[:SOURce]:RADio[1]:ARB:NOISe:CN?`	

`[:SOURce]:RADio[1]:ARB:NOISe[:STATe] ON|{OFF}|1|0`
 	
`[:SOURce]:RADio[1]:ARB:NOISe[:STATe] ?`	

`[:SOURce]:RADio[1]:ARB:REFerence[:SOURce] INTernal|EXTernal`
 	
`[:SOURce]:RADio[1]:ARB:REFerence[:SOURce]?`	

`[:SOURce]:RADio[1]:ARB:RETRigger ON|OFF|IMMediate`
 	
`[:SOURce]:RADio[1]:ARB:RETRigger?`	

`[:SOURce]:RADio[1]:ARB:RSCaling <val>`
 	
`[:SOURce]:RADio[1]:ARB:RSCaling?`
	The range is dependent upon the X-Series signal generator model.

`[:SOURce]:RADio[1]:ARB:SCALing "filename",<1%-100%>`	

`[:SOURce]:RADio[1]:ARB:SCLock:RATE <val>`
 	
`[:SOURce]:RADio[1]:ARB:SCLock:RATE?`
	The range is dependent upon the X-Series signal generator model.

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:RADio[1]:ARB:SEQuence[:MWAVeform]`
`<filename>,<waveform>,<reps>,NONE|M1`
`|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M`
`3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2`
`M3M4|ALL,{,<waveform>,<reps>,NONE|M1`
`|M2|M3|M4|M1M2|M1M3|M1M4|M2M3|M2M4|M`
`3M4|M1M2M3|M1M2M4|M1M3M4|M2M3M4|M1M2`
`M3M4|ALL,}`
 	
`[:SOURce]:RADio[1]:ARB:SEQuence[:MWAVeform]? <filename>`	

`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE`
`CONTinuous|SINGle|GATE|SADVance`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE?`	

`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:`
`CONTinuous[:TYPE] FREE|TRIGger|RESet`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:`
`CONTinuous[:TYPE]?`	

`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:`
`GATE LOW|HIGH`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:`
`GATE?`	

`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:`
`SADVance[:TYPE] SINGle|CONTinuous`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger:TYPE:`
`SADVance[:TYPE]?`	

`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce] KEY|BUS|EXT`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]?`	

`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe ON|OFF|1|0`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:DELay:STATe?`	

`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:SLOPe POSitive|NEGative`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal:SLOPe?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
E8663B SCPI Sequences (Continued)

Supported Commands	Remarks

`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]`
`EPT1|EPT2|EPTRIGGER1|EPTRIGGER2`
 	
`[:SOURce]:RADio[1]:ARB:TRIGger[:SOURce]:EXTernal[:SOURce]?`	

`[:SOURce]:RADio[1]:ARB:VCO:CLOCk[:SOURce] INTernal|EXTernal`
 	
`[:SOURce]:RADio[1]:ARB:VCO:CLOCk[:SOURce]?`	

`[:SOURce]:RADio[1]:ARB:WAVeform:NHEaders "WFM1:filename"|"SEQ:filename"`
 	
`[:SOURce]:RADio[1]:ARB:WAVeform:NHEaders?`	

`[:SOURce]:RADio[1]:ARB[:STATe]`
`ON|OFF|1|0`
 	
`[:SOURce]:RADio[1]:ARB[:STATe]?`	

Multi-Tone Subsystem (This subsystem supported on the N5166B/72B/82B only.)	
`[:SOURce]:RADio:MTONe:ARB:HEADer:CLEar`	
`[:SOURce]:RADio:MTONe:ARB:HEADer:SAVE`	
`[:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer 40e6|THRough` `[:SOURce]:RADio:MTONe:ARB:IQ:EXTernal:FILTer?`	**Command accepted without error but does nothing.**
`[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen <val><unit>` `[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen?`	
`:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO ON|OFF|1|0` `[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:ATTen:AUTO?`	
`:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer 2.1e6|40e6|THRough` `[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer?`	**Command accepted without error but does nothing.**

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
              E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
`[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer:AUTO ON|OFF|1|0` `[:SOURce]:RADio:MTONe:ARB:IQ:MODulation:FILTer:AUTO?`	**Command accepted without error but does nothing.**
`[:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold {NONE}|M1|M2|M3|M4` `[:SOURce]:RADio:MTONe:ARB:MDEStination:ALCHold?`	
`[:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe {NONE}|M1|M2|M3|M4` `[:SOURce]:RADio:MTONe:ARB:MDEStination:PULSe?`	
`[:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4 NEGative|{POSitive}` `[:SOURce]:RADio:MTONe:ARB:MPOLarity:MARKer1|2|3|4?`	
`[:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency <value>` `[:SOURce]:RADio:MTONe:ARB:REFerence:EXTernal:FREQuency?`	
`[:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce] INTernal|EXTernal` `[:SOURce]:RADio:MTONe:ARB:REFerence[:SOURce]?`	
`[:SOURce]:RADio:MTONe:ARB:SCLock:RATE <1Hz - 100MHz {100MHz}>` `[:SOURce]:RADio:MTONe:ARB:SCLock:RATE?`	
`[:SOURce]:RADio:MTONe:ARB:SETup <filename>` `[:SOURce]:RADio:MTONe:ARB:SETup?`	

Table 6-1   Supported E8257D/67D, E8247C/57C/67C, E8241A/44A, E8251A/54A, and
                 E8663B SCPI Sequences (Continued)

Supported Commands	Remarks
[:SOURce]:RADio:MTONe:ARB:SETup:STORe "file name" [:SOURce]:RADio:MTONe:ARB:SETup:TABLe <freq_spacing>,<num_tones>{,<phase>,<state>} [:SOURce]:RADio:MTONe:ARB:SETup:TABLe?	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing <freq_spacing> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:FSPacing?	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes <num_tones> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:NTONes?	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize?	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED FIXed|RANDom [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:PHASe:INITialize:SEED?	
[:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW <row_number>,<power>,<phase>,<state> [:SOURce]:RADio:MTONe:ARB:SETup:TABLe:ROW? <row_number>	
[:SOURce]:RADio:MTONe:ARB[:STATe] ON|OFF|1|0 [:SOURce]:RADio:MTONe:ARB[:STATe]?	

7 Rhode & Schwarz SMATE200A/SMIQ/SML/SMJ100A/SMU200A/SMV/SMB100A/SMBV100A Compatible Commands

Command List Overview

> **NOTE**
>
> When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following table shows the SCPI commands supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators.

For range values, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

The R&S SMIQ, SMATE, SMU, and SMU200A have dual RF outputs.

![Keysight Technologies logo]

Command List

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indicated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`:ABORt`	X	X	
`:ABORt:LIST`	X	X	
`:ABORt[:SWEep]`	X	X	
`:ARB:CLOCk`	–	X	
`:ARB:SEQuence` `AUTO|RETRigger|AAUTo|ARETrigger`	–	X	
`:ARB:STATe ON|OFF`	–	X	
`:ARB:TRIGger[:EXTernal<[1]|2>]:DELay`	–	X	
`:ARB:TRIGger:SOURce INTernal|EXTernal`	–	X	
`:ARB:WAVeform:CATalog?`	–	X	
`:ARB:WAVeform:DATA "name",<binary block data>`	–	X	
`:ARB:WAVeform:DELete "<name>"`	–	X	
`:ARB:WAVeform:SELect "<name>"`	–	X	
`:CALibration[:ALL]?`	X	X	
`:CALibration:ALL[:MEASure]?`	X	X	
`:CALibration[1]:FMOFfset[:MEASure]?`	X	X	**Returns a 0 value when calibration is completed.**
`:CALibration[1]:FREQuency[:MEASure]?`	X	X	**Command is accepted, returns a 0, but no other action is taken.**
`:CALibration[1]|2:IQModulator:FULL?`	–	X	
`:CALibration:LFGenerator[:MEASure]?`	X	X	**Command is accepted but no action is taken.**
`:CALibration[1]:LFOutput[:MEASure]?`	X	X	**Command is accepted, returns a 0, but no other action is taken.**
`:CALibration:VMODulation[:MEASure]?`	X	X	
`:DIAGnostic:INFO:CCOunt:ATTenuator1|2|3|4?`	X	X	**Supported but the numeric suffixes, `1|2|3|4` and `1|2|3|4|5|6`**, *are ignored.*
`:DIAGnostic:INFO:CCOunt:ATTenuator1|2|3|4|5|6?`	X	X	*Regardless of the numeric suffix used, the command always returns the total attenuator count.*

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indicated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`:DIAGnostic:INFO:OTIMe?`	X	X	
`DIAGnostic:INFO:POCounter?`	X	X	
`:OUTPut[1][:STATe] ON|OFF`	X	X	*Output 3 is not supported.*
`:OUTPut:AMODe AUTO|FIXed` `:OUTPut:AMODe?`	X	X	**Supported but the following parameter is not supported:** `ELECtronic`
`:OUTPut1:AMODe AUTO|FIXed`	X	X	*Output 3 is not supported.*
`:OUTPut[1]:IMPedance?`	X	X	*Always returns 50 ohms. Output 3 is not supported.*
`*RCL`	X	X	
`:READ[:POWer]?`	X	X	
`SENSe:UNIT[:POWer] DBM|W` `SENSe:UNIT[:POWer]?`	X	X	

`SENSe[:POWer]:FILTer:LENGth[:USER]`
`<avgCount>`
`SENSe[:POWer]:FILTer:LENGth[:USER]?`
	X	X	

`SENSe[:POWer]:FILTer:TYPE AUTO|USER` `SENSe[:POWer]:FILTer:TYPE?`	X	X	
`SENSe[:POWer]:FREQuency <freq><unit>` `SENSe[:POWer]:FREQuency?`	X	X	*The range is dependent upon the X-Series signal generator model.*
`SENSe[:POWer]:OFFSet <offset><unit>` `SENSe[:POWer]:OFFSet?`	X	X	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce]:AM:EXTernal:COUPling AC|DC`	X	X	
`[:SOURce]:AM[:DEPTh]`	X	X	
`[:SOURce]:AM:EXTernal:COUPling AC|DC`	X	X	
`[:SOURce]:AM:EXTernal1|2:COUPling AC|DC` `[:SOURce]:AM:EXTernal1|2:COUPling?`	X	X	
`[:SOURce]:AM:EXTernal1|2:IMPedance 600 Ohm`	X	X	*100 kOhm is not supported*
`[:SOURce]:AM:INTernal:FREQuency`	X	X	**Preset value is 1KHz.**
`[:SOURce]:AM:SOURce EXTernal|INTernal`	X	X	**Supported but the following parameter is not supported:** `TTONE| EXT, INT`

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce]:AM:SOURce INTernal|EXT2`	X	X	
`[:SOURce]:AM:STATe ON|OFF`	X	X	**In the N5166B/72B/82B, AM On does not turn off digital modulation formats.** **You may need to turn on the LF Source in conjunction with this command.**
`*SAV`	X	X	**SMATE200A & SMIQ: The Keysight X-Series supports the parameters [1-1000].** **SMJ100A: The Keysight X-Series supports the parameters [0-10], where 0 is the instrument preset state.** **SMV: The Keysight X-Series supports the parameters [1-100].** **SML: The Keysight X-Series supports the parameters [0-50].**
`[:SOURce][1]:BB:ARB:CLOCk <value>` `[:SOURce][1]:BB:ARB:CLOCk?`	–	X	*The range is dependent upon the X-Series signal generator model.*

`[:SOURce[1]]:BB:ARB:SEQuence AUTO|RETRigger| AAUTo|ARETrigger|SINGle`
 	
`[:SOURce[1]}:BB:ARB:SEQuence?`
	–	X	**AUTO: CONTinuous + Free Run**
			RETRigger: CONTinuous + Reset & Run + implicit trigger
			AAUTo: CONTinuous + Trigger & Run
			ARETrigger: CONTinuous + Reset & Run
			SINGle: SINGle + Restart on Trig

`[:SOURce][1]:BB:ARB:STATe ON|OFF` `[:SOURce][1]:BB:ARB:STATe?`	–	X	
`[:SOURce[1]]BB:ARB:TRIGger:OUTPut[1]|2|3| 4:MODE UNCHanged|RESTart|PULSe|PATTern|RATio`	–	X	

`[:SOURce[1]]:BB:ARB:TRIGger[:EXTernal[1]| 2]:DELay`
 	
`[:SOURce[1]]:BB:ARB:TRIGger[:EXTernal[1]| 2]:DELay?`
	–	X	**Supported but applied at the current sample rate when the command is sent.**

`[:SOURce[1]|2]:BB:ARB:TRIGger:SOURce INTernal| EXTernal|BEXTernal` `[:SOURce[1]|2]:BB:ARB:TRIGger:SOURce?`	–	X	**Supported but the following parameters are not supported: `OBASeband`** **If parameters are used, they will generate a parameter error.**
`[:SOURce][1]:BB:ARB:WAVeform:CATalog? [<path>]`	–	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce][1]:BB:ARB:WAVeform:DATA` `<"filename.wv">`	–	X	
`[:SOURce][1]:BB:ARB:WAVeform:DELete` `<"filename.wv">`	–	X	

`[:SOURce][1]:BB:ARB:WAVeform:SELect`
`<"filename.wv">`
`[:SOURce][1]:BB:ARB:WAVeform:SELect?`
	–	X	

`[:SOURce[1]]:BB:IQOutput:SOURce A` `[:SOURce[1]]:BB:IQOutput:SOURce?`	–	X	**Supported but the following parameters are not supported:** `|B|` **Supported, but query always returns A.**
`[:SOURce]:BB:FOFFset <val>`	–	X	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce[1]]:BB:PATH:COUNt?`	–	X	**Supported, but query always returns 1.**

`[:SOURce[1]]:BB:PGAin <value>`
 	
`[:SOURce[1]]:BB:PGAin?`
	–	X	**Command is accepted but no action is taken.**
			
			The query always returns 0.

`[:SOURce]:BB:POFFset <-360 – 360 degrees, 0>`
 	
`[:SOURce]:BB:POFFset?`
	–	X	

`[:SOURce[1]]:BB:ROUTe A` `[:SOURce[1]]:BB:ROUTe?`	–	X	**Supported but the following parameters are not supported:** `|B|AB|` **Supported, but query always returns A.**
`[:SOURce][:BB]:ARB:CLOCk <val>`	–	X	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce[1]][:BB]:ARB:CLOCk:DELay 0.0 – 0.8 (sample)` `[:SOURce[1]][:BB]:ARB:CLOCk:DELay?`	–	X	**Supported but applied at the current sample rate when the command is sent.**

`[:SOURce[1]][:BB]:ARB:CLOCk:SOURce INTernal`
 	
`[:SOURce[1]][:BB]:ARB:CLOCk:SOURce?`
	–	X	**Supported but the following parameter is not supported:** `EXTernal`.

`[:SOURce[1]][:BB]:ARB:IQ:SKEW <valueInSeconds>`
 	
`[:SOURce[1]][:BB]:ARB:IQ:SKEW?`
	–	X	

`[:SOURce[1]][:BB]:ARB:PRESet`	–	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks

`[:SOURce[1]][:BB]:ARB:SEQuence`
`AUTO|RETRigger|AAUTo|ARETrigger|SINGle`
 	
`[:SOURce][:BB]:ARB:SEQuence?`
	–	X	**AUTO: CONTinuous + Free Run**
			RETRigger: CONTinuous + Reset & Run + implicit trigger
			AAUTo: CONTinuous + Trigger & Run
			ARETrigger: CONTinuous + Reset & Run
			SINGle: SINGle + Restart on Trig

`[:SOURce[1]][:BB]:ARB:TRIGger:ARM:EXECute`	–	X	
`[:SOURce[1]][:BB]:ARB:TRIGger:EXECute`	–	X	

`[:SOURce][:BB]:ARB:TRIGger[:EXTernal[1]|2`
`]:SYNChronize:OUTPut ON|OFF|1|0`
 	
`[:SOURce][:BB]:ARB:TRIGger[:EXTernal[1]|2`
`]:SYNChronize:OUTPut?`
	–	X	

`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]`
`|2|3|4:`
`DELay 0 - 2^20-1 Samples`
 	
`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]`
`|2|3|4:`
`DELay?`
	–	X	

`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`:`
`MODE USER|'mode_string'`
`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`:MODE?`
	–	X	

`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`:MODE:`
`CATalog?`
	–	X	

`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`|3|4:`
`OFFTime 0-waveform_len-1 samples`
 	
`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`|3|4:`
`OFFTime?`
	–	X	

`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`|3|4:`
`ONTime 0-waveform_len-1 samples`
`[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2`
`|3|4:`
`ONTime?`
	–	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4: PATTern #B0,1 ... #B111...1,32 [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4: PATTern?	–	X	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4:PULSe:DIVider 2 - 2^10 [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4:PULSe:DIVider?	–	X	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4: POLarity POSitive|NEGative [:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4: POLarity?	–	X	
[:SOURce[1]][:BB]:ARB:TRIGger:OUTPut[1]|2 |3|4:PULSe:FREQuency?	–	X	
[:SOURce[1]][:BB]:ARB:TRIGger:RMODe?	–	X	
[:SOURce][:BB]:ARB[:TRIGger]:SEQuence AUTO|RETRigger|AAUTo|ARETrigger|SINGle [:SOURce][:BB]:ARB[:TRIGger]:SEQuence?	–	X	
[:SOURce[1]][:BB]:ARB:TRIGger:SLUNit SEQuence [:SOURce[1]][:BB]:ARB:TRIGger:SLUNit?	–	X	**Supported but the following parameter is not supported: SAMPle.**
[:SOURce[1]][:BB]:ARB:WAVeform:CATalog:LE NGth? [<"path">]	–	X	
[:SOURce[1]][:BB]:ARB:WAVeform:FREE?	–	X	
[:SOURce[1]][:BB]:ARB:WAVeform:POINts? [<"filename.wv">]	–	X	
[:SOURce[1]][:BB]:ARB:WAVeform:FREE?	–	X	
[:SOURce[1]]:BB:FOFFset <val> [:SOURce[1]]:BB:FOFFset?	–	X	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:CORRection[:STATe] ON|OFF|1|0	X	X	
[:SOURce]:CORRection:CSET[:SELect] <'table_name'>	X	X	
[:SOURce]:CORRection:CSET:CATalog?	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce]:CORRection:CSET:DATA:FREQuenc` `y 300 Khz to RFmax {,300 kHz to RFmax}`	X	X	
`[:SOURce]:CORRection:CSET:DATA:POWer` `-40dB to 6dB {,-40dB to 6dB}`	X	X	
`[:SOURce]:CORRection:CSET:DATA:POWer:POIN` `ts?`	X	X	
`[:SOURce]:CORRection:CSET:DELete` `<'table_name'>`	X	X	
`[:SOURce]:CORRection:CSET:FREE?`	X	X	
`[:SOURce]:DM:IQ:CREStfactor`	–	X	

`[:SOURce]:DM:IQ:IMPairment[:STATe]`
`ON|OFF`
`[:SOURce]:DM:IQ:IMPairment[:STATe]?`
	–	X	

`[:SOURce]:DM:IQ:LEAKage[:MAGNitude]` `[:SOURce]:DM:IQ:LEAKage[:MAGNitude]?`	–	X	
`[:SOURce]:DM:IQ:QUADrature:ANGLe` `[:SOURce]:DM:IQ:QUADrature:ANGLe?`	–	X	
`[:SOURce]:DM:IQRatio[:MAGNitude]` `[:SOURce]:DM:IQRatio[:MAGNitude]?`	–	X	
`[:SOURce]:DM:IQ:STATe ON|OFF` `[:SOURce]:DM:IQ:STATe?`	–	X	
`[:SOURce]:DM:IQSWap[:STATe] ON|OFF`	–	X	
`[:SOURce]:DM:LEAKage[:MAGnitude]`	–	X	
`[:SOURce]:DM:STATe ON|OFF`	–	X	
`[:SOURce]:DM:THReshold[:ALL]`	–	X	
`[:SOURce]:DM:TRIGger:DELay`	–	X	
`[:SOURce]:DM:TRIGger:INHibit`	–	X	
`[:SOURce]:DM:TRIGger:SLOPe` `POSitive|NEGative`	–	X	
`[:SOURce]:DM:TRIGger:SOURce` `EXTernal|INTernal`	–	X	
`[:SOURce]:FM:EXTernal1|2:COUPling AC|DC`	X	X	
`[:SOURce]:FM:INTernal:FREQuency`	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
[:SOURce]:FM:SOURce INTernal|EXTernal1	X	X	
[:SOURce]:FM:STATe ON|OFF	X	X	
[:SOURce]:FM1[:DEViation]	X	X	**On SMATE200A and SMIQ the preset value is 10 kHz.**
[:SOURce]:FM1:EXTernal1:COUPling AC|DC	X	X	
[:SOURce]:FM1:INTernal:FREQuency	X	X	
[:SOURce]:FM1:PREemphasis 0|50us|75us	–	–	
[:SOURce]:FM1:SOURce INTernal|EXTernal1|EXTernal2	X	X	
[:SOURce]:FM1:STATe ON|OFF	X	X	
[:SOURce]:FREQuency:CENTer <num>[<freq suffix>]	X	X	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:FREQuency[:CW|:FIXed] <val>	X	X	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:FREQuency:RCL INCLude|EXCLude	X	X	
[:SOURce]:FREQuency[:CW|:FIXed]:RCL INCLude| EXCLude	X	X	
[:SOURce]:FREQuency:MODE CW|FIXed|SWEep|LIST	X	X	**Supported but the following parameter is not supported: SWEep.**
[:SOURce]:FREQuency:MULTiplier	X	X	
[:SOURce]:FREQuency:OFFSet	X	X	
[:SOURce]:FREQuency:SPAN <num>[<freq suffix>]	X	X	
[:SOURce]:FREQuency:STARt <val>	X	X	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:FREQuency:STEP[:INCRement]	X	X	
[:SOURce]:FREQuency:STOP <val>	X	X	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:IQ:CREStfactor <val>dB	–	X	
[:SOURCE]:IQ:IMPairment:IQRatio[:MAGNitude] <value><unit> [:SOURCE]:IQ:IMPairment:IQRatio[:MAGNitude]?	–	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks

`[:SOURCE]:IQ:IMPairment:LEAKage:I`
`<value><unit>`
`[:SOURCE]:IQ:IMPairment:LEAKage:I?`
	–	X	

`[:SOURCE]:IQ:IMPairment:LEAKage:Q`
`<value><unit>`
`[:SOURCE]:IQ:IMPairment:LEAKage:Q?`
	–	X	

`[:SOURCE]:IQ:IMPairment:QUADrature[:ANGLe`
`] <value><unit>`
`[:SOURCE]:IQ:IMPairment:QUADrature[:ANGLe`
`]?`
	–	X	

`[:SOURCE]:IQ:IMPairment[:STATe] ON|OFF` `[:SOURCE]:IQ:IMPairment[:STATe]?`	–	X	
`[SOURce]:IQ:OUTPut:OFFSet:I`	–	X	
`[SOURce]:IQ:OUTPut:OFFSet:Q`	–	X	
`[:SOURce]:IQ:SOURce ANALog|BASeband`	–	X	
`[:SOURce]:IQ:STATe ON|OFF`	–	X	
`[:SOURce]:IQ:SWAP[:STATe] ON|OFF`	–	X	

`[:SOURce]:LFOutput ON|OFF|1|0`
 	
`[:SOURce]:LFOutput?`
	X	X	

`[:SOURce]:LFOutput:FREQuency <val><unit>`
 	
`[:SOURce]:LFOutput:FREQuency?`
	X	X	

`[:SOURce]:LFOutput:FREQuency:MODE`
`CW|FIXed|SWEep`
 	
`[:SOURce]:LFOutput:FREQuency:MODE?`
	X	X	

`[:SOURce]:LFOutput:FREQuency:STARt <val>`
 	
`[:SOURce]:LFOutput:FREQuency:STARt?`
	X	X	*The range is dependent upon the X-Series signal generator model.*

`[:SOURce]:LFOutput:FREQuency:STOP <val>`
 	
`[:SOURce]:LFOutput:FREQuency:STOP?`
	X	X	*The range is dependent upon the X-Series signal generator model.*

`[:SOURce]:LFOutput:SHAPe SINE|SQUare`
 	
`[:SOURce]:LFOutput:SHAPe?`
	X	X	

`[:SOURce]:LFOutput:STATe ON|OFF|1|0`
 	
`[:SOURce]:LFOutput:STATe?`
	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
[:SOURce]:LFOutput:SWEep[:FREQuency]:SHAPe SAWTooth|TRIangle [:SOURce]:LFOutput:SWEep[:FREQuency]:SHAPe?	X	X	
[:SOURce]:LFOutput:VOLTage <val><unit> [:SOURce]:LFOutput:VOLTage?	X	X	
[:SOURce]:LIST:CATalog?	X	X	
[:SOURce]:LIST:DELete <'List_name'>	X	X	
[:SOURce]:LIST:DELete:ALL	X	X	
[:SOURce]:LIST:DWELl <value>{,<value>}	X	X	
[:SOURce]:LIST:DWELl:POINts?	X	X	
[:SOURce]:LIST:FREE?	X	X	
[:SOURce]:LIST:FREQuency <value>{,<value>}	X	X	*The range is dependent upon the X-Series signal generator model.*
[:SOURce]:LIST:FREQuency:POINts?	X	X	
[:SOURce]:LIST:LEARn	X	X	
[:SOURce]:LIST:MODE AUTO|STEP	X	X	
[:SOURce]:LIST:POWer <val>dBm|block_data	X	X	
[:SOURce]:LIST:POWer:POINts?	X	X	
[:SOURce]:LIST:SELect <"list_name">	X	X	
[:SOURce][1]|2:LIST:TRIGger:EXECute	X	X	
[:SOURce][1]|2:LIST:RESET	X	X	
[:SOURce]:LIST:TRIGger:SOURce AUTO|IMM|SINGle|BUS|EXTernal	X	X	
[:SOURce]:MODulation:STATe ON|OFF|1|0 [:SOURce]:MODulation:STATe?	X	X	
[:SOURce]:PM1[:DEViation]	X	X	**On the SMATE200A, SMJ100A, and SMIQ the preset value is 1 radian.**
[:SOURce]:PM1:EXTernal1:COUPling AC|DC	X	X	
[:SOURce]:PM1:INTernal:FREQuency	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce]:PM1:SOURce` `INTernal|EXTernal1|EXTernal`	X	X	**Supported but the following parameters are not supported:** `TTONE | EXT, INT |EXTernal2`
`[:SOURce]:PM1:STATe ON|OFF`	X	X	
`[:SOURce]:POWer:ALC OFF`	X	X	**When ALC is OFF a power search will be triggered when the level changes.**
`[:SOURce]:POWer:ALC:OMODe SHOLd`	X	X	
`[:SOURce]:POWer:ALC:SEARch ON|OFF|ONCE`	X	X	
`[:SOURce]:POWer:ALC:SONCe`	X	X	
`[:SOURce]:POWer:ALC:SOURce INTernal|DIODe`	X	X	`PMETer` *not supported.*
`[:SOURce]:POWer:ALC[:STATe] ON|OFF`	X	X	**Supported but the following parameter is not supported:** `AUTO`.
`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPLitude]`	X	X	
`[:SOURce]:POWer[:LEVel][:IMMediate]:OFFSet`	X	X	

`[:SOURce]:POWer[:LEVel][:IMMediate]:RCL`
`INCLude|EXCLude`
`[:SOURce]:POWer[:LEVel][:IMMediate]:RCL?`
	X	X	

`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPL]:OFFSet`	X	X	
`[:SOURce]:POWer:MODE FIXed|SWEep|LIST`	X	X	
`[:SOURce]:POWer:STARt`	X	X	*The range is dependent upon the X-Series signal generator model.*
`[:SOURce]:POWer:STEP[:INCRement]`	X	X	
`[:SOURce]:POWer:STOP`	X	X	*The range is dependent upon the X-Series signal generator model.*

`[:SOURce]:PULM:DELay`
`<delay>|DEFault|MAXimum|MINimum|UP|DOWN`
`[:SOURce]:PULM:DELay?`
`[DEFault|MAXimum|MINimum]`
	X	X	

`[:SOURce]:PULM:PERiod`
`<period>|MAXimum|MINimum|UP|DOWN`
`[:SOURce]:PULM:PERiod? [MAXimum|MINimum]`
	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks

`[:SOURce]:PULM[:INTernal[1]]:POLarity`
`NORMal|INVerted`
 	
`[:SOURce]:PULM[:INTernal[1]]:POLarity?`
	X	X	*Does not affect the polarity of the* `INTernal`
			source selection.

`[:SOURce]:PULM:SOURce EXTernal|INTernal`	X	X	
`[:SOURce][1]|2:PULM:SOURce INT|EXT`	X	X	

`[:SOURce]:PULM:WIDTh`
`<width>|MAXimum|MINimum`
 	
`[:SOURce]:PULM:WIDTh? [MAXimum|MINimum]`
	X	X	

`[:SOURce]:PULM:STATe ON|OFF`	X	X	
`[:SOURce]:PULSe:DELay <delay>`	X	X	
`[:SOURce]:PULSe:DOUBle:DELay 50 ns to 1.3` `s`	X	X	
`[:SOURce]:PULSe:DOUBle[:STATe] ON|OFF`	X	X	
`[:SOURce]:PULSe:PERiod <period>`	X	X	**SMV & SML preset value is 10 micro-seconds.**
`[:SOURce]:PULSe:WIDTh` `<width>|MAXimum|MINimum`	X	X	**SMV & SML preset value is 1 micro-second.**
`[:SOURce]:ROSCillator[:INTernal]:` `ADJust[:STATe] ON|OFF`	X	X	
`[:SOURce]:ROSCillator[:INTernal]:ADJust` `[:VALue]`	X	X	
`[:SOURce]:ROSCillator:SOURce` `INTernal|EXTernal`	X	X	
`[:SOURce]:SWEep[:FREQuency]:DWELl`	X	X	
`[:SOURce]:SWEep[:FREQuency]:EXECute`	X	X	
`[:SOURce]:SWEep[:FREQuency]:MODE` `AUTO|MANual|STEP`	X	X	
`[:SOURce]:SWEep[:FREQuency]:POINts`	X	X	
`[:SOURce]:SWEep[:FREQuency]:SPACing` `LINear| LOGarithmic`	X	X	
`[:SOURce]:SWEep[:FREQuency]:STEP[:LINea` `r]`	X	X	
`[:SOURce]:SWEep[:FREQuency]:EXECute`	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce]:SWEep:POWer:EXECute`	X	X	
`[:SOURce][1]|2:SWEep:RESet[:ALL]`	X	X	
`:STATus:OPERation[:EVENt]?`	X	X	*The SMR values of the status bytes are accepted but the bits are not mapped, so they perform no function.*
`:STATus:OPERation:CONDition?`	X	X	
`:STATus:OPERation:ENABle <value>` `:STATus:OPERation:ENABle?`	X	X	
`:STATus:OPERation:NTRansition <value>` `:STATus:OPERation:NTRansition?`	X	X	
`:STATus:OPERation:PTRansition <value>` `:STATus:OPERation:PTRansition?`	X	X	
`:STATus:PRESet`	X	X	
`:STATus:QUEStionable:CONDition?`	X	X	
`:STATus:QUEStionable:ENABle <value>` `:STATus:QUEStionable:ENABle?`	X	X	
`:STATus:QUEStionable[:EVENt]?`	X	X	
`:STATus:QUEStionable:NTRansition <value>` `:STATus:QUEStionable:NTRansition?`	X	X	
`:STATus:QUEStionable:PTRansition <value>` `:STATus:QUEStionable:PTRansition?`	X	X	
`STATus:QUE?`	X	X	
`:STATus:QUEue[:NEXT]?`	X	X	*Returns all errors and clears the error queue.*
`:SYSTem:COMMunicate:GPIB[:SELF]:ADDRess`	X	X	
`:SYSTem:DISPlay:UPDate ON|OFF`	X	X	
`:SYSTem:DISPlay:UPDate[:STATe] ON|OFF`	X	X	
`:SYSTem:ERRor?`	X	X	**Supported but error codes will not match with R&S codes.**
`:SYSTem:ERRor:ALL?`	X	X	
`:SYSTem:ERRor:CODE:ALL?`	X	X	
`:SYSTem:ERRor:CODe[:NEXT]?`	X	X	**Supported but error codes will not match with R&S codes.**
`:SYSTem:ERRor:COUNt?`	X	X	

Table 7-1   Supported R&S SMATE/SMIQ/SML/SMJ/SMU/SMB/SMBV SCPI Sequences

Supported Commands X = Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`:SYSTem:ERRor[:NEXT]?`	X	X	
`:SYSTem:KLOCk ON	OFF`	X	X	
`:SYSTem:PRESet`	X	X	**X-Series RST state is different.**
`:SYSTem:PROTect[1]|2|3|4|5[:STATE] ON|OFF|1|0,<passwd>`	X	X	**Command is accepted but no action is taken.**
`:SYSTem:PROTect[:STATe] ON|OFF "123456"`	X	X	**Command is accepted but no action is taken.**
`:SYSTem:SERRor?`	X	X	**Supported but error codes will not match with R&S codes.**
`:SYSTem:SREStore`	X	X	
`:SYSTem:SSAVe`	X	X	
`:TRIGger:FSWeep[:IMMediate]`	X	X	
`:TRIGger:FSWeep:SOURce AUTO|IMM|SINGle/BUS|EXTernal`	X	X	
`:TRIGger:FSWeep:SOURce SINGle|BUS`	X	X	
`:TRIGger:LIST[:IMMediate]`	X	X	
`:TRIGger:LIST:SOURce AUTO|SINGle|EXTernal`	X	X	
`:TRIGger[:SWEep][:IMMediate]`	X	X	
`:TRIGger[:SWEep]:SOURce AUTO|SINGle|EXTernal`	X	X	
`:TRIGger1|2:PULSe:SOURce AUTO|EXTernal|EGATed`	X	X	

8 Keysight/HP 8656B, 8657A/B Compatible Programming Codes

Programming Code List Overview

NOTE Compatibility is provided for GPIB only; USB and LAN are not supported.

NOTE When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following tables provide a comprehensive listing of programming codes supported ("Compatible Codes" on page 102) by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators and the unsupported ("Non-Compatible Codes" on page 104) codes. Where applicable, the table for compatible codes shows the equivalent SCPI command (also GPIB only).

When the programming code/SCPI command requires a range value, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

NOTE While the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators support two channels, and two internal and external sources for analog modulation (AM, FM, and PM), the programming codes/SCPI commands in this section are mapped to only a single channel and a single internal and external source (AM[1], FM[1], and PM[1]–INTernal[1], EXTernal[1]).

KEYSIGHT
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Programming Code Lists

Compatible Codes

8656B, 8657A/B Codes[a]	Description	Equivalent SCPI Command Syntax

AM	Amplitude Modulation	`[:SOURce]:AM[1][:DEPTh][:LINear]`
		`<value><unit>|UP|DOWN`
		
		For additional commands, refer to, "S1, S2, or S3 used with AM" on page 106

AO	Amplitude Offset	`[:SOURce]:POWer[:LEVel][IMMediate]:` `OFFSet <value><unit>`
AP	Amplitude (carrier)	`[:SOURce]:POWer[:LEVel][:IMMediate]` `[:AMPLitude] <value><unit>`
DB	Unit used with the power command	`DB`
DF	Unit used with the power command	`DB`
DM	Unit used with the power command	`DBM`
DN	Step Down	**No equivalent SCPI command**
EM	Unit used with the power command	`EMF`
FM	Frequency Modulation	`[:SOURce]:FM[1][:DEViation] <value><unit>` **For additional commands, refer to,** "S1, S2, or S3 used with FM" on page 107.
FR	Frequency (carrier)	`[:SOURce]:FREQuency[:CW] <value><unit>`
GT	Flexible Sequence	**No equivalent SCPI command**
Hz	Unit used with the frequency command	`Hz`
IS[b]	Increment Set	**No equivalent SCPI command**
KZ	Unit used with the frequency command	`kHz`
MV	Unit used with the power command	`mV`
MZ	Unit used with the frequency command	`MHz`

8656B, 8657A/B Codes[a]	Description	Equivalent SCPI Command Syntax
PC[c]	Unit used with the modulation command	`PCT`
PD	Phase Decrement	`[:SOURce]:PHASE[:ADJust] <value><RAD>`
PF	Pulse Modulation (Fast Mode)	**Refer to,** "PF (Pulse Modulation-Fast Mode) or PM (Pulse Modulation)" on page 105.
PI	Phase Increment	`[:SOURce]:PHASE[:ADJust] <value><RAD>`

PM	Pulse Modulation	`[:SOURce]:PULM:SOURce EXT[1]`
		`[:SOURce]:PULM:STATe ON`
		
		See also "PF (Pulse Modulation-Fast Mode) or PM (Pulse Modulation)" on page 105

QS	Reverse Sequence	`*RCL <reg>`
RC	Recall (0–9)	`*RCL <reg>`
RL	Recall (0–99)	`*RCL <reg>`
RP[d]	Reverse Power Protection Reset	**No equivalent SCPI command**
R2	RF Off	`OUTPut[:STATe] OFF`
R3	RF On	`OUTPut[:STATe] ON`
R5	RF Dead (Full Attenuator)	`OUTPut[:STATe] OFF`
SQ	Sequence	`*RCL <reg>`
ST	Save (0–9)	`*SAV <reg>`
SV	Save (0–99)	`*RCL <reg>`
S1	External Modulation Source	**Refer to,** "S1, S2, or S3 used with AM" on page 106 or "S1, S2, or S3 used with FM" on page 107.
S2	Internal 400 Hz Modulation Source	**Refer to,** "S1, S2, or S3 used with AM" on page 106 or "S1, S2, or S3 used with FM" on page 107.
S3	Internal 1 kHz Modulation Source	**Refer to,** "S1, S2, or S3 used with AM" on page 106 or "S1, S2, or S3 used with FM" on page 107.
S4	Modulation Source Off	Refer to, "S4 (Modulation Source Off)" on page 107.
S5	DC FM	Refer to, "S5 (DC FM)" on page 108.
UP	Step Up	**No equivalent SCPI command**
UV	Unit used with the power command	`UV`

8656B, 8657A/B Codes[a]	Description	Equivalent SCPI Command Syntax
VL	Unit used with the power command	`V`
0-9	Numerals 0–9	`0-9`
–	Minus Sign	`–`
.	Decimal Point	`.`
%[d]	Unit used with the modulation command	`PCT`

a. Program codes are either upper or lower case.
b. Increment Set is implemented for frequency (FR) and amplitude (AP) only.
c. Either PC or % can be used.
d. The source of reverse power must be removed.

Non-Compatible Codes

8656B, 8657A/B Codes	Description
HI	HI ALC
LO	LO ALC
R0	Standby
R1	On

Command Mapping

When using the 8656B, 8657A/B-compatible programming codes, the X-Series signal generator internally maps these codes to an equivalent SCPI response. In addition, the modulation source selections for the 8656B, 8657A/B differ from those available in the X-Series signal generator and therefore, are mapped to a valid selection. (Refer "Modulation Sources" table.)

Modulation Sources	
8656B, 8657A/B	**Keysight X-Series Signal Generators**
AM, Internal	AM1, Internal 1
AM, External	AM1, External 1
FM, Internal	FM1, Internal 1
FM, External	FM1, External 1
AM, Internal and External	AM1, Internal 1, External 1
FM, Internal and External	FM1, Internal 1, External 1

NOTE The 8656, 8657A/B signal generators allow multiple modulations to use the same input; the X-Series signal generator does not. If you configure multiple modulations on the same input, the X-Series signal generator automatically disables the modulations.

The mapping between the 8656B, 8657A/B-compatible programming codes and the SCPI commands changes depending on the programming codes being executed. Refer to the following sections for explanations of the codes that are affected.

PF (Pulse Modulation–Fast Mode) or PM (Pulse Modulation)

The X-Series signal generator supports only one input selection for pulse which is EXTernal 1 (PULSE connector). This is a DC-coupled input. Internal pulse modulation, therefore, is not supported in the 8656B, 8657A/B-compatible language modes. The PF or PM code is mapped to the following SCPI commands:

— [:SOURce]:PULM:SOURce EXTernal[1]

— [:SOURce]:PULM:STATe ON

S1, S2, or S3 used with AM

When the AM code is executed, the following occurs:

— AM becomes the active function.

NOTE

While the N5166B/71B/72B and N5181B/82B have two AM channels, it supports only one channel (AM1) for the 8656B and 8657A/B programming codes. If AM2 is used in a SCPI command, it will be ignored and AM1 will be selected.

If AM is on, or there is no active modulation, a sequence of SCPI commands are implemented when an AM code is executed with a modulation source code. The Table below shows the sequence of SCPI commands that are implemented.

	AM On	No Active Modulation

S1	`[:SOURce]:AM[1]:EXTernal[1]:COUPling AC`
	`[:SOURce]:AM[1]:SOURce EXTernal1`
		`[:SOURce]:AM[1]:EXTernal[1]:COUPling AC`
		`[:SOURce]:AM[1]:SOURce EXTernal[1]`
		`[:SOURce]:AM[1]:STATe ON`

S2	`[:SOURce]:AM[1]:SOURce INT[1]`
	`[:SOURce]:AM[1]:INTernal[1]:FREQuency 400 Hz`
		`[:SOURce]:AM[1]:SOURce INT[1]`
		`[:SOURce]:AM[1]:INTernal[1]:FREQuency 400 Hz`
		`[:SOURce]:AM[1]:STATe ON`

S3	`[:SOURce]:AM[1]:SOURce INT[1]`
	`[:SOURce]:AM[1]:INTernal[1]:FREQuency 1 kHz`
		`[:SOURce]:AM[1]:SOURce INT[1]`
		`[:SOURce]:AM[1]:INTernal[1]:FREQuency 1 kHz`
		`[:SOURce]:AM[1]:STATe ON`

— If FM or pulse modulation is on, the signal generator attempts to set up AM with the same settings and turns off the other modulation.

S1, S2, or S3 used with FM

When the FM code is executed, the following occurs:

— FM becomes the active function.

NOTE While the N5166B/71B/72B and N5181B/82B have two FM channels, it supports only one channel (FM1) for the 8656B and 8657A/B programming codes. If FM2 is used in a SCPI command, it will be ignored and FM1 will be selected.

If FM is on, or there is no active modulation, a sequence of SCPI commands are implemented when an FM code is executed with a modulation source code. Table shows the sequence of SCPI commands that are implemented.

	FM On	**No Active Modulation**

S1	`[:SOURce]:FM[1]:EXTernal[1]:`
	`COUPling AC`
	`[:SOURce]:FM[1]:SOURce EXTernal1`
		`[:SOURce]:FM[1]:EXTernal[1]:`
		`COUPling AC`
		`[:SOURce]:FM[1]:SOURce EXTernal1`
		`[:SOURce]:FM[1]:STATe ON`

S2	`[:SOURce]:FM[1]:SOURce INT[1]`
	`[:SOURce]:FM[1]:INTernal[1]:`
	`FREQuency 400 Hz`
		`[:SOURce]:FM[1]:SOURce INT[1]`
		`[:SOURce]:FM[1]:INTernal[1]:`
		`FREQuency 400 Hz`
		`[:SOURce]:FM[1]:STATe ON`

S3	`[:SOURce]:FM[1]:SOURce INT[1]`
	`[:SOURce]:FM[1]:INTernal[1]:`
	`FREQuency 1 kHz`
		`[:SOURce]:FM[1]:SOURce INT[1]`
		`[:SOURce]:FM[1]:INTernal[1]:`
		`FREQuency 1 kHz`
		`[:SOURce]:FM[1]:STATe ON`

— If AM or pulse modulation is on, the signal generator attempts to set up FM with the same settings and turns off the other modulation.

S4 (Modulation Source Off)

— If PM is the current active function, pulse modulation is disabled by mapping to the following command:

`[:SOURce]:PULM:STATe OFF`

— If the last code executed is S2 or S3, internal modulation is turned off for the AM and FM:

`[:SOURce]:AM[1]:STATe OFF`

`[:SOURce]:FM[1]:STATe OFF`

— If the last code executed is S1, external modulation is turned off for the AM and FM:

`[:SOURce]:AM[1]:STATe OFF`

```
[:SOURce]:FM[1]:STATe OFF
```

— If the current active function is AM or FM, the appropriate modulation is
turned off:

```
[:SOURce]:AM[1]:STATe OFF
```

```
[:SOURce]:FM[1]:STATe OFF
```

— If S4 is executed with S1, S2, or S3, it will turn off the current modulation.

S5 (DC FM)

— FM becomes the active function.

— In addition, the following commands are mapped:

```
[:SOURce]:FM[1]:SOURce EXTernal1
```

```
[:SOURce]:PULM:STATe OFF
```

```
[:SOURce]:AM[1]:STATe OFF
```

```
[:SOURce]:FM[1]:EXTernal[1]:COUPling DC
```

```
[:SOURce]:FM[1]:STATe ON
```

9   Keysight/HP 8662A/63A Programming Codes

Programming Code List Overview

NOTE	Compatibility is provided for GPIB only; USB and LAN are not supported.
	Device Clear does not preset the instrument.
	To reproduce the sweep functionality, use the N5183A List Sweep features.

NOTE	When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

This section provides two listings of commands supported by the Keysight N5171B/72B EXG and N5181B/82B MXG X-Series signal generators In the lists, each code shows whether the command is supported for the 8662A, 8663A, or both:

— Table 9-1 provides a comprehensive listing of supported programming codes. Where applicable, the table shows the equivalent SCPI command (GPIB only). Some commands do not have an equivalent SCPI sequence. Where this occurs, it is also indicated in the table.

— Table 9-2 is a list of supported programming commands that set an active function and use the UP/DOWN/INCR enums. As in the previous table, equivalent SCPI commands (GPIB only) are also listed.

When the programming code/SCPI command requires a range value, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

NOTE	While the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators support two channels, and two internal and external sources for analog modulation (AM, FM, and PM), the programming codes/SCPI commands in this section are mapped to only a single channel, and a single internal and external source (AM[1], FM[1], and PM[1]–INT1, EXT1).

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Programming Code Lists

Supported Commands/Programming Codes

Table 9-1   8662A/63A Supported Commands and Equivalent SCPI Sequences

X = Supported Command for the indicated source				
CMD	**Description**	**8662**	**8663**	**Equivalent SCPI Command Sequence**
@1	Write require service mask	X	X	`*SRE <mask>` **supported, however, only 4 of the 8 bits of the 8662/8663 status byte will be set. These are**: `Entry Error`, `Hardware Error`, `Power Fail` **and** `Request Service Message (SRQ)`.
@3	Immediate execution mode	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
+D	+dBm	X	X	`DBM`
AM	AM modulation **See also**: Table on page 116	X	–	AM:DEPTh <val> <units> AM:TRAC ON FM:STAT OFF AM:STAT ON OUTPut:MOD ON
		–	X	AM:DEPTh <val> <units> AM:TRAC ON AM:STAT O OUTPut:MOD ON
AO	Amplitude off	X	X	`OUTPut:STATe OFF`

AP	Amplitude	X	X	`POW:REF:STATe OFF`
				`POWer:AMPL <val> <units>`
				`OUTPut:STATe ON`
				See also: Table on page 116

CT	Configure trigger	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
– D	– dBm Negates the power value.	X	X	`DBM`
DB	dB	X	X	`DB`
DG	Degree	X	–	`DEG`
DM	dBm	X	X	`DBM`
DN	Decrement Passes `DOWN` as parameter of active function command.	X	X	**See** Table on page 116
FA	Start frequency	X	X	**See W2, W3, W4,** **and** Table on page 116
FB	Stop frequency	X	X	**See W2, W3, W4,** **and** Table on page 116

Table 9-1   8662A/63A Supported Commands and Equivalent SCPI Sequences

X = Supported Command for the indicated source				
CMD	Description	8662	8663	Equivalent SCPI Command Sequence

FM	FM modulation
	See also: Table on page 116
		X	–	`FM:DEV <val> <units>`
				`AM:STAT OFF`
				`FM:STAT ON`
				`OUTPut:MOD ON`

		–	X	`FM:DEV <val> <units>`
				`FM:STAT ON`
				`OUTPut:MOD ON`

FR	Center frequency	X	X	`FREQuency:CW <val> <units>` **See also**: **W2, W3, and W4**, **and** Table on page 116
FS	Span frequency	X	X	**See W2, W3, W4,** **and** Table on page 116
GZ	GHz	X	X	`GHZ`
HZ	Hz	X	X	`HZ`
IS	Set increment Adds `STEP:INCR` to active function command.	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
KZ	kHz	X	X	`KHZ`

MO|M0	Modulation off	X	X	`AM:STATe OFF`
				`FM:STATe OFF`
				`PULM:STATe OFF`
				`PM:STATe OFF`
				`OUTPut:MOD OFF`

M1	**For 8662A:** ‹mod› = FM or AM, depending on which is on. Modulation source internal 400 Hz **For 8663A:** Executes `MF` with `<freq>` = 400 Hz	X	–	`<mod>:SOURce INT1` `<mod>:INT1:FREQ 400Hz`

		–	X	`AM:INT1:FREQ 400 MHz`
				`FM:INT1:FREQ 400 MHz`
				`PM:INT1:FREQ 400 MHz`
				`PULM:INT:FREQ 400 MHz`

M2	**For 8662A:** ‹mod› = FM or AM, depending on which is on. Modulation source internal 1 kHz **For 8663A:** Executes `MF` with `<freq>` = 1 kHz	X	–	`<mod>:SOURce INT1` `<mod>:INT1:FREQ 1kHz`

		–	X	`AM:INT1:FREQ 1 kHz`
				`FM:INT1:FREQ 1 kHz`
				`PM:INT1:FREQ 1 kHz`
				`PULM:INT1:FREQ 1 kHz`

M3	**For 8662A:** ‹mod› = FM or AM, depending on which is on.
	
	Modulation source external AC
		X	–	`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling AC`
				`<mod>:EXT:IMP 600`

	For 8663A:
	‹mod› = AM, FM, or PM, depending on which is on.
	NOTE: For PM, the impedance value is set using the `SP71/SP70` commands
		–	X	`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling AC`
				`<mod>:EXT:IMP 600`

Table 9-1   8662A/63A Supported Commands and Equivalent SCPI Sequences

X = Supported Command for the indicated source				
CMD	Description	8662	8663	Equivalent SCPI Command Sequence

M4	**For 8662A:** ⟨mod⟩ = FM or AM, depending on which is on.
	
	Modulation source external DC
		X	–	`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling DC`
				`<mod>:EXT:IMP 600`

	For 8663A:
	⟨mod⟩ = AM, FM, or PM, depending on which is on.
	NOTE: For PM, the impedance value is set using the SP71/SP70 commands
		–	X	`<mod>:SOURce EXT`
				`<mod>:EXT:COUPling DC`
				`<mod>:EXT:IMP 600`

MF	Modulation frequency
	
	⟨mod⟩ = FM, or PM, depending on which is on.
	
	Also see: **M1, M2, and** Table on page 116
		–	X	**AM:**
				`AM:SOUR INT1`
				`AM:SOUR:INT1:FREQ <freq>`
				FM or PM:
				`<mod>:SOUR INT1`
				`<mod>:SOUR:INT1:FREQ <freq>`
				Pulse:
				`PULM:SOUR INT`
				`PULM:INT:FREQ <freq>`
				`PULM:SOUR:INT SQUARE`

MS	Read status key message Returns status string.	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
MV	mV	X	X	`MV`
MZ	MHz	X	X	`MHZ`
N1	Linear 100 steps	X	X	**See W2, W3, and W4**
N2	Linear 1000 steps	X	X	**See W2, W3, and W4**
N3	Step size	X	X	**See W2, W3, W4,** **and** Table on page 116
N4	Log 10% steps	X	X	**See W2, W3, and W4**
N5	Log 1% steps	X	X	**See W2, W3, and W4**
PC	%	X	X	`PCT`
PL	Pulse modulation Must have an instrument with pulse capability.	–	X	`PULM:STAT ON` `OUTPut:MOD ON`

PM	Phase modulation
	Not compatible with any FM modulation.
		–	X	`PM:STAT ON`
				`OUTPut:MOD ON`
				See also: Table on page 116

RC	Recall	X	X	`*RCL`
RD	Knob down Only for manual sweep	X	X	`LIST:MANual DOWN`

Table 9-1   8662A/63A Supported Commands and Equivalent SCPI Sequences

X = Supported Command for the indicated source				
CMD	Description	8662	8663	Equivalent SCPI Command Sequence
RM	Read require service mask	X	X	`*SRE?` **supported, however, only 4 of the 8 bits of the 8662/8663 status byte will be set. These are**: `Entry Error`, `Hardware Error`, `Power Fail` **and** `Request Service Message (SRQ)`.
RU	Knob up Only for manual sweep	X	X	`LIST:MANual UP`
SP00	System preset Presets the instrument, including the compatibility language.	X	X	`SYSTem:PRESet`
SP10	Frequency offset off	X	X	`FREQ:OFFS:STAT OFF`

SP11	Positive frequency offset
	
	The 8662 modifies the output, but does not change the displayed frequency; the PSG modifies the displayed frequency, but does **not** change the output. Because of this, you must first set the offset, then reapply the frequency to change the output.
		X	X	`FREQ:OFFS -<value>`
				`FREQ:OFFS:STAT ON`
				`FREQ:CW <displayed value>`

SP12	Negative frequency offset
	
	The 8662 modifies the output, but does not change the displayed frequency; the PSG modifies the displayed frequency, but does **not** change the output. Because of this, you must first set the offset, then reapply the frequency to change the output.
		X	X	`FREQ:OFFS <value>`
				`FREQ:OFFS:STAT ON`
				`FREQ:CW <displayed value>`

SP20	ALC bandwidth normal	–	X	`POWer:ALC:BANDwidth:AUTO ON`
SP21	ALC bandwidth < 1 kHz	–	X	`POWer:ALC:BANDwidth:AUTO OFFPOWer:ALC:BANDwidth 200 HZ`
SP30	Amplitude reference off	X	X	`POW:REF:STATe OFF`

SP31	Amplitude reference	X	X	`POW:REF <val>`
				`<val>` = current amplitude setting
				`POW:REF:STATe ON`

SP32	Amplitude reference relative to 1 μ V	–	X	`POW:REF 106.99DBM POW:REF:STATe ON` `POW 1UV`
SP40	External AM off	X	X	`AM:STAT OFF`

SP41	Internal FM + external AM (AC)	X	–	`FM:SOUR INT1`
				`FM:INT1:FREQ 400 HZ`
				`FM:STAT ON`
				`AM:SOUR EXT1`
				`AM:EXT1:IMP 600`
				`AM:DEPTH 95 PCT`
				`AM:EXT1:COUP AC`
				`AM:STAT ON`

Table 9-1   8662A/63A Supported Commands and Equivalent SCPI Sequences

X = Supported Command for the indicated source				
CMD	Description	8662	8663	Equivalent SCPI Command Sequence

SP42	Internal FM + external AM (DC)	X	–	`FM:SOUR INT1`
				`FM:INT1:FREQ 400 HZ`
				`FM:STAT ON`
				`AM:SOUR EXT1`
				`AM:EXT1:IMP 600`
				`AM:DEPTH 95 PCT`
				`AM:EXT1:COUP DC`
				`AM:STAT ON`

SP70	External PM input impedance 50 Ω Effects the behavior of `M3` and `M4`.	–	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
SP71	External PM input impedance 600 Ω Effects the behavior of `M3` and `M4`.	–	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
SP80	Special functions 10-62 off	X	X	`AM:STAT OFF` `FREQ:OFFS:STAT OFF`
SP85	Amplitude correction off	X	X	`POWer:ALC:STATe OFF`
SP86	Amplitude correction on PSG ALC ON always works with sweep.	X	X	`POWer:ALC:STATe ON`
SP87	Amplitude correction on (includes Sweep)	–	X	`POWer:ALC:STATe ON`
SP98	Turn display on	–	X	`DISP ON`
SP99	Turn display off	–	X	`DISP OFF`
ST	Store Saves/recalls register to sequence 0.	X	X	`*SAV`
T1	0.5 ms per step	X	X	`SWEEP:DWELL 0.5ms` **Beyond PSG range limit; is set to 1ms.**
T2	1 ms per step	X	X	`SWEEP:DWELL 1ms`
T3	2 ms per step	X	X	`SWEEP:DWELL 2ms`
T4	10 ms per step	X	X	`SWEEP:DWELL 10ms`
T5	100 ms per step	X	X	`SWEEP:DWELL 100ms`
TR	Trigger Performs command code setup with `CT` command.	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
UP	Increment Passes `UP` as a parameter of the active function command.	X	X	**See Table on page 116**
UV	mV	X	X	`UV`

Table 9-1   8662A/63A Supported Commands and Equivalent SCPI Sequences

X = Supported Command for the indicated source				
CMD	Description	8662	8663	Equivalent SCPI Command Sequence
W1	Sweep off	X	X	`FREQ:MODE CW` `LIST:TRIG:SOUR IMM`

W2	Auto sweep mode on
	
	Generates a sweep list based on stored parameters from FA, FB, FR, FS, N1, N2, N3, N4, and N5
	Default values:
	FR = 100 MHz,
	FS = 10 MHz,
	N1, T2 FA = 1 MHz,
	FB = 1279 MHz
		X	X	`INIT:CONT ON`
				`SWEEP:MODE AUTO`
				`LIST:TRIG:SOUR IMM`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`

W3	Manual sweep mode on
	
	Generates a sweep list based on stored parameters from FA, FB, FR, FS, N1, N2, N3, N4, and N5
	Default values:
	FR = 100 MHz,
	FS = 10 MHz,
	N1, T2 FA = 1 MHz,
	FB = 1279 MHz
		X	X	`INIT:CONT ON`
				`SWEEP:MODE MANual`
				`LIST:TRIG:SOUR IMM`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`

W4	Single sweep mode on
	
	Generates a sweep list based on stored parameters from FA, FB, FR, FS, N1, N2, N3, N4, and N5
	Default values:
	FR = 100 MHz,
	FS = 10 MHz,
	N1, T2 FA = 1 MHz,
	FB = 1279 MHz
		X	X	`INIT:CONT OFF`
				`SWEEP:MODE AUTO`
				`LIST:TRIG:SOUR IMM`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`
				`INIT`

X6	Marker off	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**
Y0	Remote stepped sweep off	X	X	`FREQ:MODE CW` `LIST:TRIG:SOUR IMM`

Y1|Y2	Remote stepped sweep on	X	X	`INIT:CONT ON`
				`SWEEP:MODE AUTO`
				`LIST:DWELl:TYPE STEP`
				`LIST:TYPE LIST`
				`FREQ:MODE LIST`
				`LIST:TRIG:SOUR BUS`

Y3	Execute remote stepped sweep	X	X	`*TRG`

Supported Active Function Commands and UP/DOWN/INCR Enums

Table 9-2   8662/63B Command Compatibility for Active Functions and
                     UP/DOWN/INCR Enums

X = Supported by Keysight N5183A **– = Not supported by Keysight N5183A**						
CMD	**Description**	**Sets Active Function**	**Compatible with UP/DN**	**8662**	**8663**	**Equivalent SCPI Commands for UP/DN and Increment**

AM	AM modulation	X	X	X	X	`AM:DEPTH UP`
						`AM:DEPTH DOWN`
						`AM:DEPTH:STEP:INCR`

AP	Amplitude	X	X	X	X	`POW:AMPL UP`
						`POW:AMPL DOWN`
						`POW:AMPL:STEP:INCR`

FA	Start frequency	X	X	X	X	`FREQ:CW:STEP:INCR`
FB	Stop frequency	X	X	X	X	`FREQ:CW:STEP:INCR`

FM	FM modulation	X	X	X	X	`FM:DEV UP`
						`FM:DEV DOWN`
						`FM:DEV:STEP:INCR`

FR	Center frequency	X	X	X	X	`FREQ:CW UP`
						`FREQ:CW DOWN`
						`FREQ:CW:STEP:INCR`

FS	Span frequency	X	X	X	X	`FREQ:CW:STEP:INCR`

MF	Modulation frequency	X	X	X	X	`<mod>:INT:FREQ UP`
						`<mod>:INT:FREQ DOWN`
						`<mod>:INT:FREQ:STEP:INCR`
						`<mod> = AM|FM|PM|PULM`

N3	Step size	X	X	X	X	**supported by the X-Series signal generators, but there is no equivalent SCPI command sequence**

PM	Phase modulation
	Not compatible with any FM modulation.
		X	X	X	X	`PM:DEV UP`
						`PM:DEV DOWN`
						`PM:DEV:STEP:INCR`

10 Aeroflex IFR3410 Compatible Commands

Command List Overview

NOTE

When using the SCPI commands in this section, you must set the remote programming language to the correct language format. See "Selecting the Programming Language" on page 10 for more information.

The following table shows the SCPI commands supported by the Keysight N5166B CXG, N5171B/72B EXG, and N5181B/82B MXG X-Series signal generators.

For range values, use the range values listed in the X-Series signal generator **Data Sheet**, or as shown in the *Keysight X-Series Signal Generators SCPI Command Reference*.

The Aeroflex IFR3410 has dual RF outputs.

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Command List

Table 10-1   Supported Aeroflex IFR3410 Compatible SCPI Commands

IFR3410 Command X= Supported by indIcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`:CALibration:IQUSer:ADJust`	X	X	
`:CALibration:IQUSer:MODE SPOT|SPAN` `:CALibration:IQUSer:MODE?`	X	X	**Supported but the frequency unit suffix is not supported.**

`:CALibration:IQUSer:SPAN`
`SPAN20|SPAN40|SPAN80|SPAN120`
`:CALibration:IQUSer:SPAN?`
	X	X	

`:OUTPut[:POWer][:STATe] OFF|ON|0|1` `:OUTPut[:POWer][:STATe]?`	X	X	
`[:SOURce]:FREQuency[:CW|:FIXed]` `<NRf>(Hz)|MAXimum| MINimum|UP|DOWN`	X	X	**Supported but the following parameters are not supported:** `RETurn	REFerence`
`[:SOURce]:FREQuency[:CW|:FIXed]:STEP[:INC` `Rement] <NRf>(Hz)	MAXimum	MINimum`	X	X	
`[:SOURce][:MODulation]:AM[1][:DEPTh]` `<NRf>(PCT)| MAXimum|MINimum|UP|DOWN`	X	X	**Supported but the following parameters are not supported:** `RETurn	REFerence`
`[:SOURce][:MODulation]:AM[1]:EXTernal:` `COUPling AC	DC`	X	X	

`[:SOURce][:MODulation]:AM[1]:INTernal:`
`FREQuency[:FIXed]`
`<NRf>(Hz)|MAXimum|MINimum|UP|DOWN`
	X	X	**Supported but the following parameters are not supported:**
			`RETurn
				REFerence`

`[:SOURce][:MODulation]:AM[1]:INTernal2:FR`
`EQuency[:FIXed]:STEP[:INCRement]`
`<value>[freq unit]|MAXimum|MINimum`
 	
`[:SOURce][:MODulation]:AM[1]:INTernal2:FR`
`EQuency[:FIXed]:STEP[:INCRement]?`
	X	X	

`[:SOURce][:MODulation]:AM[1]:INTernal:` `SHAPe SINE`	X	X	**Supported but the following parameters are not supported:** `SQUare	TRIangle	RAMP`
`[:SOURce][:MODulation]:AM[1]:SOURce` `INTernal| EXTernal`	X	X	
`[:SOURce][:MODulation]:AM[1]:STATe` `OFF|ON|0|1`	X	X	

Table 10-1　　　　　Supported Aeroflex IFR3410 Compatible SCPI Commands (Continued)

IFR3410 Command X= Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce][:MODulation]:FM[1][:DEViatio n] <value>(Hz)|MAXimum|MINimum|UP|DOWN`	X	X	**Supported but the following parameter is not supported:** `RETurn | REFerence`
`[:SOURce][:MODulation]:FM[1]:EXTernal: COUPling AC| DC`	X	X	
`[:SOURce][:MODulation]:FM[1]:INTernal: FREQuency[:FIXed] <value>(Hz)|MAXimum|MINimum|UP|DOWN`	X	X	**Supported but the following parameter is not supported:** `RETurn | REFerence`

`[:SOURce][:MODulation]:FM[1]:INTernal2:FR EQuency[:FIXed]:STEP[:INCRement] <value>[freq unit]|MAXimum|MINimum`
 	
`[:SOURce][:MODulation]:FM[1]:INTernal2:FR EQuency[:FIXed]:STEP[:INCRement]?`
	X	X	

`[:SOURce][:MODulation]:FM[1]:INTernal: SHAPe SINE`	X	X	**Supported but the following parameters are not supported:** `SQUare | TRIangle | RAMP`
`[:SOURce][:MODulation]:FM[1]:SOURce INTernal| EXTernal`	X	X	
`[:SOURce][:MODulation]:FM[1]:STATe OFF|ON|0|1`	X	X	
`[:SOURce][:MODulation]:IQ:ARB:ABORt`	–	X	
`[:SOURce][:MODulation]:IQ:ARB:INITiate`	–	X	
`[:SOURce][:MODulation]:IQ:ARB[:MEMory]:FO RMat <wide_sectors>` `[:SOURce][:MODulation]:IQ:ARB[:MEMory]:FO RMat?`	–	X	**Command accepted without error but does nothing.**
`[:SOURce][:MODulation]:IQ:ARB:MODE SINGle|CONTinuous` `[:SOURce][:MODulation]:IQ:ARB:MODE?`	–	X	
`[:SOURce][:MODulation]:IQ:ARB:RESTart ENABle|DISable`		X	
`[:SOURce][:MODulation]:IQ:ARB:RMSoffset <rms_offset>` `[:SOURce][:MODulation]:IQ:ARB:RMSoffset?`	–	X	**Command accepted without error but does nothing.** **Query always returns a 0.**

`[:SOURce][:MODulation]:IQ:ARB:TOFFset <sample_rate_offset_in_parts_per_million>`
 	
`[:SOURce][:MODulation]:IQ:ARB:TOFFset?`
	–	X	

Table 10-1   Supported Aeroflex IFR3410 Compatible SCPI Commands (Continued)

IFR3410 Command X= Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks

`[:SOURce][:MODulation]:IQ:ARB:TRIGger`
`IMMediate|STARt`
`SOURce][:MODulation]:IQ:ARB:TRIGger?`
	–	X	**Supported but the following parameter is not supported:** `SSTOP`
			Supported but the polarity is only positive.

`[:SOURce][:MODulation]:IQ:ARB:WAVeform:CA` `Talog?`	–	X	
`[:SOURce][:MODulation]:IQ:ARB:WAVeform:CH` `ECksum? <"filename.aiq">`	–	X	**Command accepted without error but does nothing.** **Query always returns a 1.**
`[:SOURce][:MODulation]:IQ:ARB:WAVeform:DA` `TA <"filename.aiq">,#blockdata`	–	X	
`[:SOURce][:MODulation]:IQ:ARB:WAVeform:DE` `Lete:ALL`	–	X	
`[:SOURce][:MODulation]:IQ:ARB:WAVeform:DE` `Lete[:FILE] <"filename.aiq">`	–	X	
`[:SOURce][:MODulation]:IQ:ARB:WAVeform:DL` `Oad <"filename.aiq">,#blockdata`	–	X	

`[:SOURce][:MODulation]:IQ:ARB:WAVeform:FO`
`RMat <wide_sectors> -- ignored`
`[:SOURce][:MODulation]:IQ:ARB:WAVeform:FO`
`RMat?`
	–	X	**Command accepted without error but does nothing.**

`[:SOURce][:MODulation]:IQ:ARB:WAVeform:SE`
`Lect <"filename.aiq">`
`[SOURce][:MODulation]:IQ:ARB:WAVeform:SEL`
`ect?`
	–	X	**Supported but the path is not returned, only the basename. Auto enables ARB On when waveform is downloaded.**

`[:SOURce][:MODulation]:IQ:ARB:WAVeform:SU` `MMary? <"filename.aiq">`	–	X	
`[:SOURce][:MODulation]:IQ:DIFFerential:IC` `Hannel:OFFSet <value>`	–	X	
`[:SOURce][:MODulation]:IQ:DIFFerential:QC` `Hannel:OFFSet <value>`	–	X	

`[:SOURce][:MODulation]:IQ:STATe`
`OFF|ON|0|1`
`[:SOURce][:MODulation]:IQ:STATe?`
	–	X	

`[:SOURce][:MODulation]:IQ:SOURce`
`ARB|EANalog`
`[:SOURce][:MODulation]:IQ:SOURce?`
	–	X	**Supported but the following parameters are not supported:**
			`DIFFerential|DM|EDIGital`

Table 10-1   Supported Aeroflex IFR3410 Compatible SCPI Commands (Continued)

IFR3410 Command X= Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`[:SOURce][:MODulation]:PM[1][:DEViatio n]` `<value>(rad)|MAXimum|MINimum|UP|DOWN`	X	X	**Supported but the following parameters are not supported:** `RETurn	REFerence`
`[:SOURce][:MODulation]:PM[1]:INTernal: FREQuency[:FIXed]` `<NRf>(Hz)|MAXimum|MINimum|UP|DOWN`	X	X	**Supported but the following parameters are not supported:** `RETurn|REFerence`

`[:SOURce][:MODulation]:PM[1]:INTernal2:FR EQuency[:FIXed]:STEP[:INCRement]`
`<value>[freq unit]|MAXimum|MINimum`
 	
`[:SOURce][:MODulation]:PM[1]:INTernal2:FR EQuency[:FIXed]:STEP[:INCRement]?`
	X	X	

`[:SOURce][:MODulation]:PM[1]:INTernal: SHAPe SINE`	X	X	**Supported but the following parameters are not supported:** `SQUare	TRIangle	RAMP`
`[:SOURce][:MODulation]:PM[1]:SOURce INTernal| EXTernal`	X	X	
`[:SOURce][:MODulation]:PM[1]:STATe OFF|ON|0|1`	X	X	
`[:SOURce][:MODulation]:PULM:STATe OFF|ON|0|1`	X	X	
`[:SOURce][:MODulation]:PULM:SOURce EXTernal`	X	X	**Supported but the following parameters are not supported:** `INTernal`
`[:SOURce]:POWer:ALC:BW AUTO|MODerate|NARRow|BROad` `[:SOURce]:POWer:ALC:BW?`	X	X	**Command accepted without error but does nothing.**
`[:SOURce]:POWer:ALC[:STATe]` `AUTO|NORMal|AM|FROZen |SCALed`	X	X	**Supported but if queried, the X-Series signal generator only returns a 1 or a 0.**
`[:SOURce]:POWer[:LEVel][:IMMediate][:AMPL itude]   <numeric_value>`	X	X	
`:STATus:OPERation:TRIGger`	X	X	
`:STATus:QUEStionable:MODulation:AM`	X	X	
`:STATus:QUEStionable:MODulation:ARB`	X	X	
`:STATus:QUEStionable:MODulation:DM`	X	X	
`:STATus:QUEStionable:MODulation:FM`	X X	X	
`:STATus:QUEStionable:MODulation:IQ`	X	X	

Table 10-1   Supported Aeroflex IFR3410 Compatible SCPI Commands (Continued)

IFR3410 Command X= Supported by indlcated X-Series Signal Generator – = Not supported by indicated X-Series Signal Generator	N5171B/81B	N5166B/72B/82B	Remarks
`:STATus:QUEStionable:MODulation:PM`	X	X	
`:STATus:QUEStionable:MODulation:PULM`	X	X	
`:STATus:QUEStionable:ROSC`	X	X	
`:SYSTem:COMMunicate:GPIB[:SELF]:ADDRess` `<number>`	X	X	
`:SYSTem:ERRor:ALL?`	X	X	**Supported but the error codes will be X-Series signal generator specific (i.e. Aeroflex error codes do not apply).**
`:SYSTem:ERRor:CODe:ALL?`	X	X	**Supported but the error codes will be X-Series signal generator specific (i.e. Aeroflex error codes do not apply).**
`:SYSTem:ERRor:CODe[:NEXT]?`	X	X	**Supported but the error codes will be X-Series signal generator specific (i.e. Aeroflex error codes do not apply).**
`:SYSTem:ERRor[:NEXT]?`	X	X	**Supported but the error codes will be X-Series signal generator specific (i.e. Aeroflex error codes do not apply).**
`:SYSTem:PRESet`	X	X	
`:SYSTem:SETTings:FULL:SAVE <0…99>`	X	X	
`:SYSTem:SETTings:FULL:RECall <0…99>`	X	X	
`:UNIT:VoltTYPe PD|EMF` `:UNIT:VoltTYPe?`	X	X	

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