Programming Reference Guide

HP 8923B DECT Test Set

HEWLETT PACKARD

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Introduction

The HP 8923B DECT Test Set tests DECT Fixed and Portable Parts. The instrument can be operated manually using the front-panel keys or remotely using the Hewlett-Packard Interface Bus (HP-IB).

Relevant Documents

The HP-IB conforms to IEEE 488.1 and IEEE 488.2 standards providing bi-directional data transfer between devices. The HP 8923B also follows the Standard Commands for Programmable Instrument, (SCPI), Volume 2 (1994) standard with respect to its command structure. This allows several functions:

- Programs running in the HP 8923B's IBASIC Controller can control all the HP 8923B's functions using its internal HP-IB. This controller provides a single-instrument automated test system.
- Programs running in the HP 8923B's IBASIC Controller can control other instruments connected to the bus.
- A connected controller can remotely control the HP 8923B.

For instructions on connecting the HP 8923B to the instrument bus, the printer, and the controller, refer to the *HP 8923B DECT Test Set User's Manual.*

Configuration

This chapter tells you how to configure a computer to your HP 8923B for HP-IB control.

1. Attach an HP-IB cable from the rear panel HP-IB connector to any instruments/ controller in the test system.
2. Access the CONFIG screen.
3. Set the `HP-IB Adrs`.
4. Set the `HP-IB Mode`.
   a. `Talk&Lstn` should be used unless you are using the HP 8923B to control the connected HP-IB devices.
   b. `Control` configures the HP 8923B to be a system controller. Use this setting for controlling connected HP-IB devices.

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Command Guidelines

Rules and guidelines for HP-IB programming are contained in this chapter and Chapter 3, "Equivalent Front Panel Key Commands". These chapters inform you of how to operate the HP 8923B using HP-IB.

Command Names

All commands of greater than four characters have an alternate abbreviated form using only the upper case letters and number (if used).

Upper or lower case characters may be used for all commands

For example, to set the amplitude of RF Generator, you could use any of the following commands:

```
RFGENERATOR:AMPLITUDE -10DBM
           or
rfgenerator:amplitude -10DBM
           or
   rfg:ampl -10DBM
           or
   RFG:AMPL -10DBM
```

Optional Parts of Commands

In the description of a command, any part enclosed in square brackets [] is optional. It may be omitted for brevity or included for completeness. The brackets are symbolic and must not be sent as part of the command. In the description of a command which can be set to one value from a list are represented with the list elements separated by a |.

Example

```
DECT:DUMMy[:STATe] ON | OFF | 0 | 1
```

may be sent as

```
DECT:DUMMy ON
```

or

```
DECT:DUMMy:STATe ON
```

Command Punctuation

Note The punctuation for HP 8923B HP-IB commands conforms to the IEEE 488.2 standards. It is possible that the programming language you are running on your controller will not accept some of the punctuation used in the BASIC examples. It is therefore necessary that you understand the punctuation and language equivalents required by your language for HP-IB operation.

Using Quotes for String Entries

Quotation marks (' and ") are used to select a string field setting, for example Portable in the `DECT:EUT` field. The value is entered into the command line as a quoted alphanumeric string.

Quotes are used with all Underlined (toggle) and menu choice (One-of-many fields).

For example, if you need to set the BER screen's `Display` to Ratio, you would enter the menu choice, 'Ratio'.

```
DISP:BET 'Ratio'
```

Using Spaces

When changing a field setting, a space must always precede the value in the command (command <space> value), regardless of field type.

Example

```
RFG:AMPL space -20DBM
```

Command Structure

HP-IB command syntax is arranged by a control hierarchy that is analogous to front panel operation.

When you want to configure the instrument using front-panel controls, access the screen first, select the desired field, and make the appropriate setting. HP-IB commands are used in the same way, using a colon (:) to separate the command headers.

For example, if you have already accessed the CALL SETUP screen using the "DISP CALL" command, and you want to drive the HP 8923 to test the "Fixed" part, enter the command:

```
DECT:EUT 'Fixed'
```

Using Semicolons for Multiple Commands

You can output multiple commands from one program line by separating the commands with a semicolon (;). Commands which follow a semi-colon are interpreted as existing at the same hierarchical level as the previous command unless they begin with a colon. If they do begin with a colon they are interpreted as a complete command path.

For example, on one command line, you can -

1. Access the CALL setup screen,
2. Set the dummy bearer carrier,
3. Set the dummy bearer timeslot,
4. Start the dummy bearer transmitting.

For example,

```
DISP CALL;:DECT:PP:DUMMy:CARR 3;SLOT 8;STATE ON
which is equivalent to
DISP CALL;:DECT:PP:DUMMy:CARR 3;:DECT:PP:DUMMy:SLOT 8;:DECT:PP:DUMMy:STATe ON
```

and is equivalent to each command on individual lines.

Using Question Marks to Query

The question mark (?) is used to query (read-back) an instrument setting or measurement value. It is entered immediately at the end of a command line query. Information must be read into a variable before it can be displayed, printed, or used as a numeric value in your program.

Queried information is returned in the same format used to set the value (a queried numeric entry function returns numeric data; quoted string functions return quoted string information).

For example, the BASIC language commands . . .

```
OUTPUT 714;"DISP:BET?"    !Query the BER measurement display field.
ENTER 714;Bet$            !Enter queried value into a variable.
PRINT Bet$                !Print the queried value.
```

. . . print the string value of the BER Measurement display field. The printed value for this example is either CNT, or Ratio (depending on the current field setting).

Specifying Units of Magnitude

Many of the HP 8923B's numeric settings and measurements have one or more associated units (V, mV, μV; Hz, kHz, MHz, GHz). Using manual operation, the units can be easily changed to the most convenient format by pressing the appropriate units key on the front panel.

HP-IB operation is similar to manual operation in that allows any units which are appropriate to that field to be employed. However, using HP-IB, numeric values are returned in the units defined by the appropriate :UNIT subsystem, see Appendix A.

Syntax Diagrams

The syntax diagrams display at a glance the commands relevant to the subsystem. In the diagrams, "Sp" indicates a space between commands.

3

Equivalent Front Panel Key Commands

Most front-panel keys have an equivalent HP-IB command. All command examples that follow in this document are in HP BASIC language.

Front Panel Keys

(SHIFT), (CANCEL), Cursor Knob

These front-panel features are not required for HP-IB use, and have no equivalent HP-IB commands.

DATA Keys

Apart from the number keys, the DATA keys contain the units keys, (ON/OFF), YES, NO, and (ENTER). Data Functions are turned on and off using the STATe command. YES, NO, and (ENTER) have no equivalent HP-IB command.

DATA FUNCTION Keys

The Data Functions enable you to change the way measurements are calculated and displayed. These keys are (AVG), (INCR SET), (REF SET), (INCR ×10), and (INCR ÷10).

Guidelines for Using Data Functions

- Attribute units (AUNits) are used when Data Functions (such as REF SET) are enabled. This allows you to discriminate between the units used for the measurement result and the units used for the Data Function being used.
- Data Function values, such as the number of Averages or the Reference value, are retained for later use if the function is turned off. However, the values are lost under the following conditions:
  - □ The HP 8923B is turned off.
  - □ The HP 8923B is PRESET.
  - □ A saved register is recalled.

(AVG)

This key sets the number of measurements for the averaging function.

Syntax `:AVERage:VALue <value>`
Example - Set an averaging value of 10 for the output power from the Portable Part.

```
OUTPUT 714;"MEAS:RF:NTP:AVER 10"
```

To Reset Averaging

Use the RES command to reset the averaging algorithm used to calculate an averaged measurement.

Syntax - `:AVERage:RESet`
Example - `OUTPUT 714;"MEAS:RF:NTP:AVER:RES"`

(INCR SET)

This key specifies an increment value for appropriate numeric fields.

Syntax - `:INCR <value>`
Example - Set the increment value for the `Amplitude` field to 2.5.

```
OUTPUT 714;"RFG:AMPL:INCR 2.5 DBM"
```

Note HP-IB units are assumed for the increment value unless you specify a Display unit.

Specifying the INCRement Mode

The INCR MODE command specifies logarithmic or linear increments.

Syntax - `:INCR:MODE <LINear or LOGarithm>`
Example - `OUTPUT 714;"RFG:FREQ:INCR:MODE LINear"`

(INCR÷10)

This key reduces the current increment value for a setting by a factor of ten.

Syntax - `:INCRement:DIVide`
Example - Reduce the increment value from 10 dBm to 1 dBm for the RF Generator `Amplitude` field.

```
OUTPUT 714;"RFG:AMPL:INCR:DIV"
```

(INCR×10)

This key increases the current increment value for a setting by a factor of ten.

Syntax - `:INCRement:MULTiply`
Example - Increase the increment value from 1 dBm to 10 dBm for the RF Generator `Amplitude` field.

```
OUTPUT 714;"RFG:AMPL:INCR:MULT"
```

Increment Up/Down (Arrow Keys (⇧)/(⇩))

This keys change the setting's value by one increment value (up or down). The increment value is determined by the INCR SET (INCR) function.

Syntax - `:INCRement <UP or DOWN>`
Example - Increment the RF Generator `Amplitude` field's value.

```
OUTPUT 714;"RFG:AMPL:INCR UP"
```

(REF SET)

This key defines the level when making a reference measurement.

Syntax - `:REFerence <value>`
Example - `OUTPUT 714;"MEAS:RF:FREQ:DEV:ONE:REF 10"`

Unless you specify a different unit, the HP-IB unit for the measurement is assumed when setting the reference value.

INSTRUMENT STATE Keys

LOCAL

This key returns control of the instrument to the front-panel keys after using HP-IB.

Syntax - LOCAL <address>
Example - Restore manual control to the instrument at HP-IB address 714.

```
LOCAL 714
```

PRESET

This key resets the HP 8923B to its power-up state. This is an IEEE 488.2 Common Command.

Syntax - *RST
Example - OUTPUT 714;"*RST"

RECALL

This key recalls an instrument setup that has been saved. The REGister command in the syntax is optional.

Syntax - [REGister:]RECall '<quoted string>' or <numeric>
Example - Two ways of recalling register named SETUP1.

```
OUTPUT 714;"REG:REC 'SETUP1'"
OUTPUT 714;"REC 'SETUP1'"
```

See Also. Refer to the *SAV and *RCL Common Commands described later in the Common Command Section.

SAVE

This key saves the instrument setup. The REGister command in the syntax is optional.

Syntax - [REGister:]SAVE '<quoted string>' or <numeric>
Example - Two ways of saving register SETUP1-

```
OUTPUT 714;"REG:SAVE 'SETUP1'"
OUTPUT 714;"SAVE 'SETUP1'"
```

Removing Saved Registers

One or all instrument setups you have saved can be removed from memory. The REGister command in the syntax is optional.

Syntax - [REGister:]CLEar '<quoted string>' or <numeric> or :ALL
Examples

OUTPUT 714;"REG:CLE 'SETUP2'" - Removes register SETUP2.
OUTPUT 714;"CLE:ALL" - Removes all saved registers.

See Also. Refer to the *SAV and *RCL Common Commands described later in the Common Command Section.

SCREEN CONTROL Keys

(MSSG), (HELP), (CONFIG)

The DISPlay command is used to access any screen, including those manually accessed using these keys.

Syntax.

DISPlay <screen>

Example - `OUTPUT 714;"DISP CONFigure"`

(HOLD)

There is no equivalent HP-IB command for the measurement HOLD key function. However, you can imitate this function using Single Triggering of measurements. Refer to the *Triggering Measurements* information later in this section.

(PREV)

There is no equivalent HP-IB command for the PREV key function.

(PRINT)

The PRINT function is used to print a 'pixel dump' of the displayed screen, and does not have an equivalent HP-IB command. To print measurement results using HP-IB, you must query the measurement and print the value in a format determined by your program.

USER Keys

There are no equivalent HP-IB commands for the USER keys.

4

Command Summary

Table 4-1. Command Summary

Subsystem	Commands (in alphabetical order)
IEEE 488.2 Common Commands	*CLS
	*ESE
	*ESR?
	*IDN?
	*OPC
	*OPT?
	*PCB
	*RCL
	*RST
	*SAV
	*SRE
	*STB?
	*TRG
	*TST?
	*WAI
AFANalyser Subsytem:	AFANalyzer:INPut
	AFANalyzer:VOLTage
AFGenerator Subsytem:	AFGenerator[:STATe]
	AFGenerator:AMPLitude
	AFGenerator:FREQuency
	AFGenerator:TRANsmit
	AFGenerator:TX
	AFGenerator:VARiable:FREQuency
	AFGenerator:VARiable:FREQuency:DUNits
	AFGenerator:VARiable:FREQuency:INCRement
	AFGenerator:VARiable:FREQuency:INCRement:DIVide
	AFGenerator:VARiable:FREQuency:INCRement:DUNits
	AFGenerator:VARiable:FREQuency:INCRement:MODE
	AFGenerator:VARiable:FREQuency:INCRement:MULTiply
	AFGenerator:VARiable:FREQuency:UNITs

Table 4-1. Command Summary (continued)

Subsystem	Commands (in alphabetical order)
BETest Subsytem:	BETest:BITS
	BETest:BITS:INCRement
	BETest:WERRor:CRITerion
CONFigure Subsytem:	CONFigure:BADDress
	CONFigure:BEEPer
	CONFigure:BMODe
	CONFigure:DATE
	CONFigure:DECT:MSYNc
	CONFigure:EDISk
	CONFigure:INTensity
	CONFigure:PRINt:ADDRess
	CONFigure:PRINt:FFENd
	CONFigure:PRINt:FFSTart
	CONFigure:PRINt:LINes
	CONFigure:PRINt:PORTs
	CONFigure:PRINt:TITLe
	CONFigure:SPORt:BAUD
	CONFigure:SPORt:DATA
	CONFigure:SPORt:IBECho
	CONFigure:SPORt:IECHo
	CONFigure:SPORt:PARity
	CONFigure:SPORt:RPACe
	CONFigure:SPORt:SINPut
	CONFigure:SPORt:STOP
	CONFigure:SPORt:XPACe
	CONFigure:SRLocation
	CONFigure:TIME
DECT Subsytem:	DECT:DUMMy[:STATe]
	DECT:DUMMy:SYNC:ABORt
	DECT:DUMMy:SYNC[:IMMediate]
	DECT:EUT
	DECT:EUT:PARI?
	DECT:EUT:PMID?
	DECT:FP:DUMMy:CARRier?
	DECT:FP:DUMMy:SLOT
	DECT:FP:DUMMy:SYNC:ABORt
	DECT:FP:DUMMy:SYNC[:IMMediate]

Table 4-1. Command Summary (continued)

Subsystem	Commands (in alphabetical order)
	DECT:FP:TRAFfic:CARRier
	DECT:FP:TRAFfic:CARRier:INCRement
	DECT:FP:TRAFfic:CONNect
	DECT:FP:TRAFfic:RELease
	DECT:FP:TRAFfic:SLOT
	DECT:FP:TRAFfic:SLOT:INCRement
	DECT:LOGGing[:STATe]
	DECT:LOGGing:SPORt:BAUD
	DECT:LOGGing:SPORt:HANDshake
	DECT:PARI
	DECT:PMID
	DECT:PP:DUMMy[:STATe]
	DECT:PP:DUMMy:CARRier
	DECT:PP:DUMMy:CARRier:INCRement
	DECT:PP:DUMMy:SLOT
	DECT:PP:DUMmy:SLOT:INCRement
	DECT:PP:TRAFfic:CARRier
	DECT:PP:TRAFfic:CARRier:INCRement
	DECT:PP:TRAFfic:CONNect
	DECT:PP:TRAFfic:RELease
	DECT:PP:TRAFfic:SLOT
	DECT:PP:TRAFfic:SLOT:INCRement
	DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape?
	DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape:STATus?
	DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna
	DECT:PROPrietary:TX:AField:MTail:TEST:ANTenna:INCRement
	DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:SEND
	DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape
	DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape:SEND
	DECT:STATus?
	DECT:SYNC[:IMMediate]
	DECT:SYNC:ABORt
	DECT:TRAFfic:CONNect
	DECT:TRAFfic:RELease
	DECT:VOICe:DESTination

Table 4-1. Command Summary (continued)

Subsystem	Commands (in alphabetical order)
DISPlay Subsytem:	DISPlay
	DISPlay[:SCReen]
	DISPlay:BETest
	DISPlay:BETest:VIEW
	DISPlay:FREQuency
	DISPlay:OSCilloscope
ESOurce Subsytem:	ESOurce:POWer:ADVance
	ESOurce:POWer:ADVance:DUNits
	ESOurce:POWer:ADVance:INCRement
	ESOurce:POWer:ADVance:INCRement:DIVide
	ESOurce:POWer:ADVance:INCRement:DUNits
	ESOurce:POWer:ADVance:INCRement:MODE
	ESOurce:POWer:ADVance:INCRement:MULTiply
	ESOurce:POWer:ADVance:UNITs
	ESOurce:POWer:OPOSition
	ESOurce:POWer:OPOSition:DUNits
	ESOurce:POWer:OPOSition:INCRement
	ESOurce:POWer:OPOSition:INCRement:DIVide
	ESOurce:POWer:OPOSition:INCRement:DUNits
	ESOurce:POWer:OPOSition:INCRement:MODE
	ESOurce:POWer:OPOSition:INCRement:MULTiply
	ESOurce:POWer:OPOSition:UNITs
	ESOurce:SLOT
	ESOurce:SLOT:INCRement
	ESOurce:STATe
	ESOurce:PATTern
MEASure Subsytem:	MEASure:AUDio:ACVolts?
	MEASure:AUDio:DCVolts?
	MEASure:AUDio:FREQuency?
	MEASure:AUDio:OSCilloscope:MARKer:LEVel:VOLTs?
	MEASure:AUDio:OSCilloscope:MARKer:TIME?
	MEASure:AUDio:OSCilloscope:TRACE?

Table 4-1. Command Summary (continued)

Subsystem	Commands (in alphabetical order)
MEASure Subsytem:	MEASure:BETest:BERRor:COUNt?
	MEASure:BETest:BERRor:ICOunt?
	MEASure:BETest:BERRor:IRATio?
	MEASure:BETest:BERRor:RATio?
	MEASure:BETest:BTESted?
	MEASure:BETest:IBTested?
	MEASure:BETest:IWTested?
	MEASure:BETest:WERRor:COUNt?
	MEASure:BETest:WERRor:ICOunt?
	MEASure:BETest:WERRor:IRATio?
	MEASure:BETest:WERRor:RATio?
	MEASure:BETest:WTESted?
	MEASure:MODE
	MEASure:PACKet
	MEASure:PATTern
	MEASure:PATTern:DBField
	MEASure:RF:FREQuency:ACCuracy?
	MEASure:RF:FREQuency:COMPosite?
	MEASure:RF:FREQuency:DEViation:ONE:BAVerage?
	MEASure:RF:FREQuency:DEViation:ONE:BMAXimum?
	MEASure:RF:FREQuency:DEViation:ONE:BMINimum?
	MEASure:RF:FREQuency:DEViation:ZERO:BAVerage?
	MEASure:RF:FREQuency:DEViation:ZERO:BMAXimum?
	MEASure:RF:FREQuency:DEViation:ZERO:BMINimum?
	MEASure:RF:FREQuency:DRIFt?
	MEASure:RF:NTPower?
	MEASure:RF:PTIMe:MARKer:LEVel:FALL?
	MEASure:RF:PTIMe:MARKer:LEVel:MID?
	MEASure:RF:PTIMe:MARKer:LEVel:RISE?
	MEASure:RF:PTIMe:MARKer:TIME:FALL?
	MEASure:RF:PTIMe:MARKer:TIME:MID?
	MEASure:RF:PTIMe:MARKer:TIME:RISE?
	MEASure:RF:PTIMe:MASK:FALL?
	MEASure:RF:PTIMe:MASK:MID
	MEASure:RF:PTIMe:MASK:RISE?
	MEASure:RF:PTIMe:TRACe:FALL?
	MEASure:RF:PTIMe:TRACe:MID?
	MEASure:RF:PTIMe:TRACe:RISE?

Table 4-1. Command Summary (continued)

Subsystem	Commands (in alphabetical order)
	MEASure:RF:TIMing:JITTer:
	MEASure:RF:TIMing:JITTer:AUNits
	MEASure:RF:TIMing:JITTer:AVERage[:VALue]
	MEASure:RF:TIMing:JITTer:AVERage:RESet
	MEASure:RF:TIMing:JITTer:AVERage:STATe
	MEASure:RF:TIMing:JITTer:DUNits
	MEASure:RF:TIMing:JITTer:REFerence[:VALue]
	MEASure:RF:TIMing:JITTer:REFerence:DUNits
	MEASure:RF:TIMing:JITTer:REFerence:STATe
	MEASure:RF:TIMing:JITTer:STATe
	MEASure:RF:TIMing:JITTer:UNITs
	MEASure:SYNC?
OSCilloscope Subsystem:	OSCilloscope:MARKer:NPEak
	OSCilloscope:MARKer:PPEak
	OSCilloscope:MARKer:POSition
	OSCilloscope:SCALe:TIME
	OSCilloscope:SCALe:VERTical:OFFSet
	OSCilloscope:SCALe:VOLTs
	OSCilloscope:TRIGger:LEVel
	OSCilloscope:TRIGger:LEVel:INCRement
	OSCilloscope:TRIGger:MODE
	OSCilloscope:TRIGger:PRETrigger
	OSCilloscope:TRIGger:PRETrigger:INCRement
	OSCilloscope:TRIGger:RESet
	OSCilloscope:TRIGger:SENSe
	OSCilloscope:TRIGger:SOURce
	OSCilloscope:TRIGger:TYPE
PTIMe Subsytem:	PTIMe:Marker:POSition:FALL
	PTIMe:Marker:POSition:MID
	PTIMe:Marker:POSition:RISE
	PTIMe:MASK
	PTIMe:ZFIeld
REGister Subsytem:	[REGister:]CLEar
	[REGister:]CLEar:ALL
	[REGister:]RECall
	[REGister:]SAVE

Table 4-1. Command Summary (continued)

Subsystem	Commands (in alphabetical order)
RFANalyzer Subsytem:	RFANalyzer:AMPLitude
	RFANalyzer:AMPLitude:CORRection:LOSS
	RFANalyzer:CARRier
	RFANalyzer:CARRier:INCRement
	RFANalyzer:COUPling
	RFANalyzer:COUPling:INPut
	RFANalyzer:FREQuency
	RFANalyzer:PMETer:ZERO
RFGenerator Subsytem:	RFGenerator:AMPLitude
	RFGenerator:ATTenuator
	RFGenerator:ATTenuator:AUTO
	RFGenerator:CW:CARRier
	RFGenerator:CW:PATTern
	RFGenerator:MODE
STATus Subsytem:	STATus:CALibration
	STATus:COMMunicate
	STATus:HARDware1
	STATus:HARDware2
	STATus:OPERation
	STATus:PRESet
	STATus:QUEStionable
	(Five additional sub-commands at end of STATus Subsystem Chapter)
SYSTem Subsytem:	SYSTem[:ERRor]?
TRIGger Subsytem:	TRIGger[:IMMediate]
	TRIGger:ABORt
	TRIGger:BETest
	TRIGger:BETest:MODE
	TRIGger:DELay
	TRIGger:MODE:RETrigger
	TRIGger:SOURce

5

IEEE 488.2 Common Commands

IEEE 488.2 mandates the use of some common commands. These commands have a special syntax (beginning with a *), which is not legal for other commands. The common commands control some of the basic instrument functions:

- Instrument identification and reset
- Status reading and clearing
- Receiving and processing of commands and queries by the instrument

*CLS
(Clear Status)

The *CLS (clear status) common command clears the status data structures, including the device defined error queue. This command also aborts the *OPC. If the *CLS command immediately follows a PROGRAM MESSAGE TERMINATOR, the output and the MAV (message available) bit will be cleared.

Command Syntax

*CLS

Example

OUTPUT 714;"*CLS"

*ESE
(Event Status Enable)

The *ESE command sets the Standard Event Status Enable Register bits. The Standard Event Status Enable Register contains a mask value for the bits to be enabled in the Standard Event Status Register. A "one" in the Standard Event Status Enable Register will enable the corresponding bit in the Standard Event Status Register, a logic zero will disable the bit. Refer to Figure 20-2 for the information about the Standard Event Status Enable Register bits. The *ESE query returns the contents of the Standard Event Status Enable Register.

Command Syntax

*ESE? <mask>
Where <mask> = 0 to 255

Example

```
OUTPUT 714;"*ESE 1"
```

In this example,the *ESE 1 command will enable the OPC (operation complete) bit 6 of the Standard Event Status Enable Register.

Query Syntax

*ESE?

Returned Format

<mask><NL>
Where <mask> = 0 to 255

Example

```
OUTPUT 714;"*ESE?"
ENTER 714;Event
PRINT Event
```

Table 5-1. Event Status Enable Register

Bit	Weight	Event Status Enable Register Enables	Condition
0	1	OPC - Operation Complete	0=operation is not complete
1	2	RQC - Request Control	0=request control - NOT used - always 0
2	4	QYE - Query Error	0=no query errors 1=a query error has been detected
3	8	DDE - Device Dependent Error	0=no device dependent errors 1=a device dependent error has been detected
4	16	EXE - Execution Error	0=no execution error 1=an execution error has been detected
5	32	CME - Command Error	0=no command errors 1=a command error has been detected
6	64	URQ - User Request	not used in the HP 8923B
7	128	PON - Power On	1=an OFF to ON transition has occurred

*ESR? (Event Status Register)

The *ESR? query returns the contents of the Standard Event Status Register.

Note Reading the Standard Event Status Register clears the contents of the register.

Query Syntax:

*ESR?

Returned Format

<status><NL>

Where <status> = 0 to 255

Example

```
OUTPUT 714;"*ESR?"
ENTER 714;Event
PRINT Event
```

Table 5-1 shows the Event Status Register. The table shows each bit in the Event Status Register and the bit weight. When you read the Event Status Register, the value returned is the total bit weights of all bits that are true at the time you read the byte.

*IDN? (Identification Number)

The *IDN? query allows the instrument to identify itself. It returns the string:

"Hewlett-Packard,8923B, XXXXUYYYYY,B.UU.VV"

Where:

XXXXUYYYYY = the serial number of this instrument

B.UU.VV = the firmware revision of this instrument.

An *IDN? query must be the last query in a message. Any queries after the *IDN? query in this program message will be ignored.

Query Syntax

*IDN?

Returned Format

Hewlett-Packard,8923B,XXXXUYYYYY,B.UU.VV<NL>

Example

```
DIM Id$[100]
OUTPUT 714;"*IDN?"
ENTER 714;Id$
PRINT Id$
```

*OPC (Operation Complete)

The *OPC (operation complete) command will cause the instrument to set the operation complete bit in the Standard Event Status Register only when all pending operations are complete.
The *OPC? query places an ASCII "1" in the output queue when all pending device operations are complete. There is a one second minimum delay between the query and the response.
A pending operation in the HP 8923B is any measurement which is armed but not complete. When in remote operation with repetitive triggering all measurements, apart from BER, are self-arming. When in remote operation with single triggering all measurements, apart from BER, are armed by sending the `TRIGger[:IMMediate]` command or *TRG.
The BER measurement is armed by sending the `TRIGger:BETest:RUN` command.

Command Syntax

*OPC

Example

```
OUTPUT 714;"*OPC"
```

Query Syntax

*OPC?

Returned Format

1<NL>

Example

```
OUTPUT 714;"*OPC?"
ENTER 714;Op
PRINT Op
```

*OPT?

The *OPT? query will return a string containing the instrument options that are installed in the HP 8923B.

Query Syntax

*OPT?

Return Syntax

Where <string> = "0,0,0"

Note Currently, there are no reportable options available in the HP 8923B.

Example

```
DIM Value$[100]
OUTPUT 714;"*OPT?"
ENTER 714;Value$
PRINT Value$
```

*PCB

The *PCB command tells the instrument the address of the controller to which control is to be passed back when the instrument sends a "take control" message.

Command Syntax

*PCB <primary addess><secondary address>
Where
<primary address> = integer 0 to 30
<secondary address> = integer 0 to 30

Example

```
OUTPUT 714;"*PCB 7,0 "
```

*RCL (Recall)

The *RCL command restores the state of the instrument from the specified internal save/recall register. An instrument setup must have been stored previously in the specified register. Registers 0 through 99 are general purpose and can be used with the *SAV command.

Note An error message will appear on the screen if nothing has been previously saved in the specified register.

Command Syntax

*RCL <rcl_register>

Where <rcl_register> = 0 through 99 though the total number of registers used may be limited by the amount of memory available.

Example

```
OUTPUT 714;"*RCL 75"
```

An instrument state stored using [REGister:]SAVE may be recalled using *RCL or [REGister:]RECall. If the [REGister:]SAVE uses an alphanumeric string as the register name, the *RCL command will not work. *RCL only works with registers named using an integer from 0 through 99.

*RST (Reset)

The *RST command places the instrument in a known state. It is equivalent to pressing the front panel (PRESET) key.

Command Syntax

*RST

Example

```
OUTPUT 714;"*RST"
```

*SAV (Save)

The *SAV command stores the current state of the instrument in an internal save register. The data parameter is the number of the save register where the data will be saved. Internal registers 0 through 99 are valid for this command. The total number of registers which can be saved is limited by the number of settings which differ from their preset condition and the memory available.

Command Syntax

*SAV <number>
Where <number> = 0 through 99
Example

```
OUTPUT 714;"*SAV 85"
```

The [REGister:]RECall command may be used to return the instrument to the state at which the instrument was saved using *SAV. The [REGister:]RECall must use the same integer to return to this state. Strings are not accepted.

*SRE (Service Request Enable)

The *SRE command sets the Service Request Enable Register bits. The Service Request Enable Register contains a mask value for the bits to be enabled in the Status Byte Register. A logic one in the Service Request Enable Register will enable the corresponding bit in the Status Byte Register, a logic zero will disable the bit. Refer to Table 5-2 for the definition of the bits in the Service Request Enable Register. For additional information, refer to the STATus Subsystem in Chapter 20.

The *SRE query returns the current setting.

Command Syntax

*SRE <mask>
Where <mask> = 0 through 255

Example

```
OUTPUT 714;"*SRE 16"
```

Note This example enables a service request to be generated when a message is available in the output queue. When a message is available, the MAV bit will be high.

Query Syntax

*SRE?
<mask><NL>
Where <mask> = sum of all the bits that are set, 0 through 255.

Example

```
OUTPUT 714;"*SRE?"
ENTER 714;Value
PRINT Value
```

Table 5-2. Service Request Enable Settings

Bit Number	Description	Defined	Used in the HP 8923B
0	HARDware1 Status Register summary bit	HP 8923B	yes
1	HARDware2 Status Register summary bit	HP 8923B	yes
2	COMMunicate Status Register summary bit	HP 8923B	yes
3	QUEStionable Status Register summary bit	SCPI	yes
4	MAV	IEEE 488.2	yes
5	Standard Event Register summary bit	IEEE 488.2	yes
6	RQS	IEEE 488.1	yes
7	OPERation Status Register summary bit	SCPI	yes

*STB? (Status Byte)

The *STB? query returns the current value of the instrument's status byte. The RQS (request service) bit is reported on bit 6. The RQS indicates whether or not the device has at least one reason for requesting service.

Note To read the instrument's status byte with RQS reported on bit 6, use the HP-IB Serial Poll.

Query Syntax

*STB?

Query Syntax

<value><NL>

Where <value> = 0 through 255

Example

```
OUTPUT 714;"*STB?"
ENTER 714;Value
PRINT Value
```

*TRG
(Trigger)

The *TRG command has the same effect as the Trigger[:IMMediate] command and instructs the instrument to trigger.

Command Syntax

*TRG

Example

```
OUTPUT 714;"*TRG"
```

*TST? (Test)

The *TST query causes the instrument to perform a self-test. The result of the test will be placed in the output queue.

Note Prior to sending this command, all front panel inputs must be disconnected.

A zero indicates the test passed and a non-zero value indicates the test failed.

Command Syntax

*TST?

Returned Format

<result><NL>

Where <result> = 0 or a non-zero value.

0 indicates the test has passed.

Non-zero indicates the test has failed.

The non-zero values indicate the following failures:

Table 5-3. Test Failures

Returned Value	Failed Section
1	Host CPU failure
2	ROM Checksum failure
4, 8, or 16 (depending on the address of the failure block)	ROM Test failure
32	Timer Chip failure
64	Real-time Clock failure
128	Keyboard failure
256	CRT failure
512	RF Hardware failure
1024	RS-232 Port A failure
2048	RS-232 Port B failure
4096	DSP or D-Board communications failure

*WAI
(Wait)

The *WAI command pauses the instrument, preventing it from executing any further HP-IB commands of queries until no operations are pending.

Command Syntax

*WAI

Example

```
OUTPUT 714;"MEAS:PATTERN 'Facc'"
OUTPUT 714;"TRIG:MODE:RETRIGGER SINGLE"
OUTPUT 714;"*TRG"
OUTPUT 714;"*WAI"
! The following command will not execute until the trigger has occurred
! and is a valid measurement result.
OUTPUT 714;"MEAS:RF:FREQ:ACC?"
ENTER 714;Freq_acc
PRINT Freq_acc
```

6

Status Registers

This overview details the status reporting system of the HP 8923B. It describes the contents and meaning of the various registers, bits, and queues in the status reporting structure. The status reporting structure used by the HP 8923B complies with the IEEE 488.2 (1987) standard.

The HP 8923B also complies with SCPI status reporting requirements. This subsystem covers errors that result from broken hardware, executing a command or attempting to execute a command over the HP-IB, as well as progress from outstanding operations. For additional information, refer to the STATus Subsystem in Chapter 20.

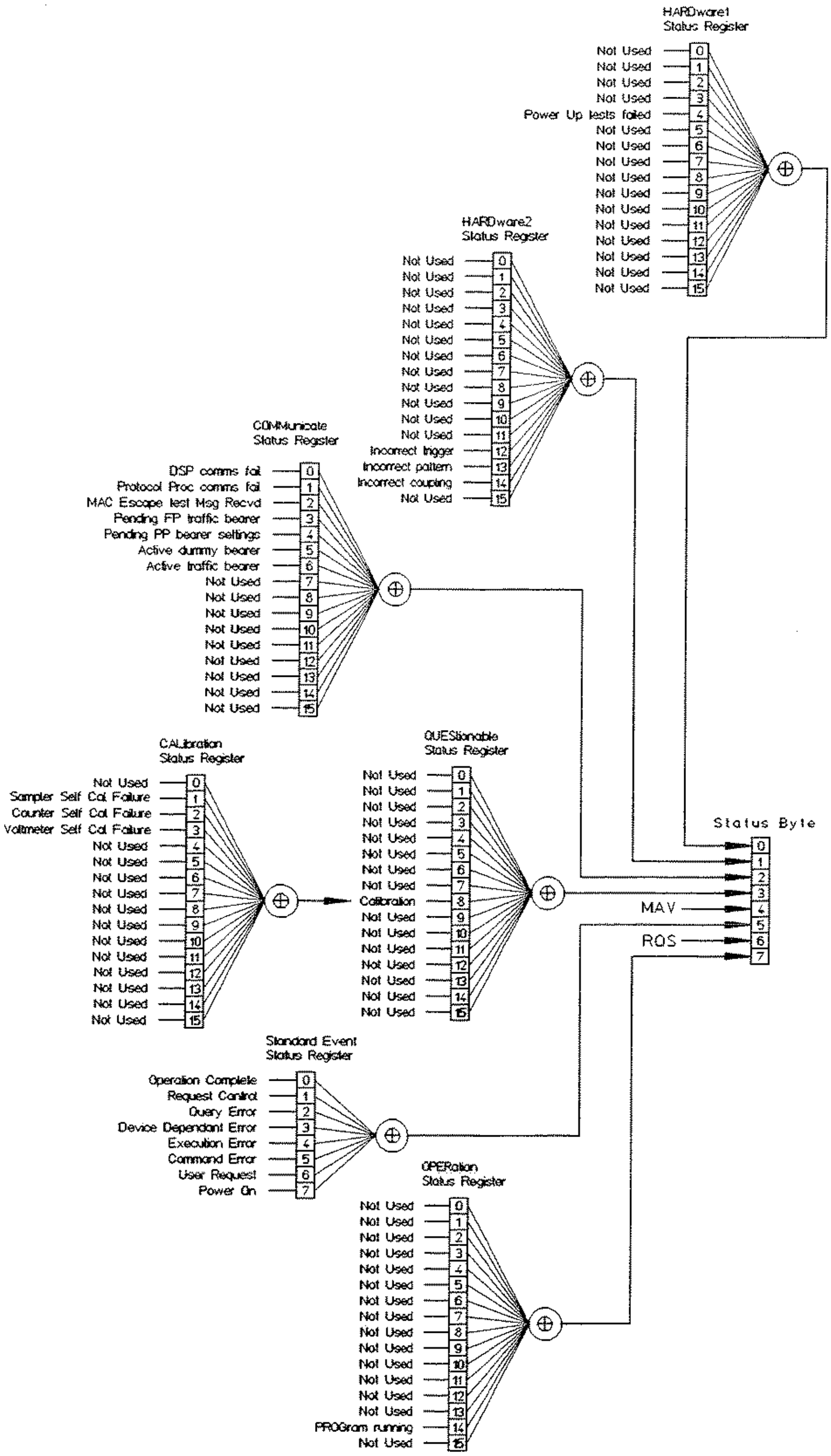


Figure 6-1. Status Registers

Status Byte

The Status Byte describe is returned in response to a Serial Poll, or a direct read of the status register.

Table 6-1. Status Byte Register

Bit Number	Description	Defined	Implemented
0	HARDware1 Status Register summary bit	HP 8923B	yes
1	HARDware2 Status Register summary bit	HP 8923B	yes
2	COMMunicate Status Register summary bit	HP 8923B	yes
3	QUEStionable Status Register summary bit	SCPI	yes
4	MAV	IEEE 488.2	yes
5	Standard Event Register summary bit	IEEE 488.2	yes
6	RQS	IEEE 488.1	yes
7	OPERation Status Register summary bit	SCPI	yes

All of these bits are summary bits that indicate there is some information existing in this or another register or message queue. The Status Register itself is defined in IEEE 488.2 (1987) standard.

Bit 0 — This is a summary bit that indicates a bit is set (TRUE) in the HARDware1 Status Register.

Bit1 — This is a summary bit that indicates a bit is set (TRUE) in the HARDware2 Status Register.

Bit 2 — This is a summary bit that indicates a bit is set (TRUE) in the COMMunicate Status Register.

Bit 3 — This is a summary bit for the QUEStionable Data/Signal Status Register.

Bit 4 — This is a summary bit that indicates that there is information in the HP-IB output queue, when set (TRUE).

Bit 5 — This is a summary bit for the Standard Event Status Register.

Bit 6 — Unlike all the other bits in all the status registers, it cannot be masked. This is the bit that is responsible for causing the Service Request to be sent to the controller (SRQ).

Bit 7 — This is a summary bit for the Operation Status Register defined by SCPI.

Status Registers

The registers are summarized in the Status Byte. All of the registers follow the requirements of IEEE 488.2 (1987), having enable (mask) registers. The registers also have associated transition registers and condition registers. The enable, transition, and condition registers are not shown but are assumed to have a one-to-one correspondence with the status registers.

OPERation Status Register

Table 6-2. OPERation Status Register

Bit Number	Description	Defined	Implemented
0	CALibrating	SCPI	no
1	SETTing	SCPI	no
2	RANGing	SCPI	no
3	SWEeping	SCPI	no
4	MEASuring	SCPI	no
5	Waiting for TRIGger summary	SCPI	no
6	Waiting for ARM summary	SCPI	no
7	CORRecting	SCPI	no
8	Availble to the designer	SCPI	no
9	Availble to the designer	SCPI	no
10	Availble to the designer	SCPI	no
11	Availble to the designer	SCPI	no
12	Availble to the designer	SCPI	no
13	INSTrument summary	SCPI	no
14	PROGram Running	SCPI	yes
15	0	SCPI	no

Bit 14 is asserted whenever an HP 8923B IBASIC programming is in the running state.

Standard Event Status Register

Table 6-3. Standard Event Status Register

Bit Number	Description	Defined	Implemented
0	Operation Complete	IEEE	yes
1	Request Control	IEEE	yes
2	Query Error	IEEE	yes
3	Device Dependant Error	IEEE	yes
4	Execution Error	IEEE	yes
5	Command Error	IEEE	yes
6	User Request	IEEE	no
7	Power On	IEEE	yes
8	Reserved by IEEE	IEEE	no
9	Reserved by IEEE	IEEE	no
10	Reserved by IEEE	IEEE	no
11	Reserved by IEEE	IEEE	no
12	Reserved by IEEE	IEEE	no
13	Reserved by IEEE	IEEE	no
14	Reserved by IEEE	IEEE	no
15	Reserved by IEEE	IEEE	no

Execution errors in the HP 8923B are caused by attempting an operation that is not possible due to the current state of the instrument. Command and query errors are detected by the HP-IB language parser and are associated with the syntax of the command or query.

An entry will be placed into the System Error Queue whenever a Command, Execution, Query, or Device Dependant Error is reported.

Device Dependant Errors are used with pending entries.

Bit 0 is set whenever all active measurements have made one complete valid measurement and all outgoing signals are stable. Bit 7 is set to a logic one every time the power has been removed since the last HP-IB command.

QUEStionable Status Register

Table 6-4. QUEStionable Status Register

Bit Number	Description	Defined	Implemented
0	VOLTage	SCPI	no
1	CURRent	SCPI	no
2	TIME	SCPI	no
3	POWer	SCPI	no
4	TEMPerature	SCPI	no
5	FREQuency	SCPI	no
6	PHASe	SCPI	no
7	MODulation	SCPI	no
8	CALibration Status Register summary bit	SCPI	yes
9	Available to the designer	SCPI	no
10	Available to the designer	SCPI	no
11	Available to the designer	SCPI	no
12	Available to the designer	SCPI	no
13	Available to the designer	SCPI	no
14	Command warning	SCPI	no
15	0	SCPI	no

Bit 8 indicates that calibration is questionable. This acts, in the HP 8923B, as a summary bit for the calibration status register.

CALibration Status Register

Table 6-5. CALibration Status Register

Bit Number	Description	Defined	Implemented
0	unused	HP 8923B	no
1	Sampler Self calibration failed	HP 8923B	yes
2	Counter Self calibration failed	HP 8923B	yes
3	Voltmeter Self calibration failed	HP 8923B	yes
4	unused	HP 8923B	no
5	unused	HP 8923B	no
6	unused	HP 8923B	no
7	unused	HP 8923B	no
8	unused	HP 8923B	no
9	unused	HP 8923B	no
10	unused	HP 8923B	no
11	unused	HP 8923B	no
12	unused	HP 8923B	no
13	unused	HP 8923B	no
14	unused	HP 8923B	no
15	0	SCPI	no

Bit 1 is asserted whenever the High Speed Sampler Self Calibration procedure fails.

Bit 2 is asserted whenever the Counter Self Calibration procedure fails.

Bit 3 is asserted whenever the Voltmeter Self Calibration procedure fails.

HARDware1 Status Register

Table 6-6. HARDware1 Status Register

Bit Number	Description	Defined	Implemented
0	unused	HP 8923B	no
1	unused	HP 8923B	no
2	unused	HP 8923B	no
3	unused	HP 8923B	no
4	Power-up Self Test Failure	HP 8923B	yes
5	unused	HP 8923B	no
6	unused	HP 8923B	no
7	unused	HP 8923B	no
8	unused	HP 8923B	no
9	unused	HP 8923B	no
10	unused	HP 8923B	no
11	unused	HP 8923B	no
12	unused	HP 8923B	no
13	unused	HP 8923B	no
14	unused	HP 8923B	no
15	0	SCPI	no

Bit 4 is asserted whenever the power-up digital diagnostic self tests fail.

HARDware2 Status Register

Table 6-7. HARDware2 Status Register

Bit Number	Description	Defined	Implemented
0	unused	HP 8923B	no
1	unused	HP 8923B	no
2	unused	HP 8923B	no
3	unused	HP 8923B	no
4	unused	HP 8923B	no
5	unused	HP 8923B	no
6	unused	HP 8923B	no
7	unused	HP 8923B	no
8	unused	HP 8923B	no
9	unused	HP 8923B	no
10	unused	HP 8923B	no
11	unused	HP 8923B	no
12	Improper trigger selection	HP 8923B	yes
13	Improper pattern selection	HP 8923B	yes
14	Improper coupling selection	HP 8923B	yes
15	0	SCPI	no

Bit 12 is asserted whenever an incorrect trigger has been selected for the given instrument state.
Bit 13 is asserted whenever an unsupported measurement pattern has been selected.
Bit 14 is asserted whenever coupling of the analyzer to the dummy is not possible.

COMMunicate Status Register

Table 6-8. COMMunicate Status Register

Bit Number	Description	Defined	Used in the HP 8923B
0	DSP communication failure	HP 8923B	yes
1	Protocol processor communication failure	HP 8923B	yes
2	MAC escape test message received	HP 8923B	yes
3	FP traffic bearer setting pending	HP 8923B	yes
4	PP bearer setting pending	HP 8923B	yes
5	Active dummy bearer	HP 8923B	yes
6	Active traffic bearer	HP 8923B	yes
7	unused	HP 8923B	no
8	unused	HP 8923B	no
9	unused	HP 8923B	no
10	unused	HP 8923B	no
11	unused	HP 8923B	no
12	unused	HP 8923B	no
13	unused	HP 8923B	no
14	unused	HP 8923B	no
15	0	SCPI	no

Bit 0 is asserted whenever there is a failure in communications between the host processor and the DSP processor.

Bit 1 is asserted whenever there is a failure in communications between the host processor and the protocol processor.

Bit 2 is asserted whenever a MAC layer ESCAPE test message is received.

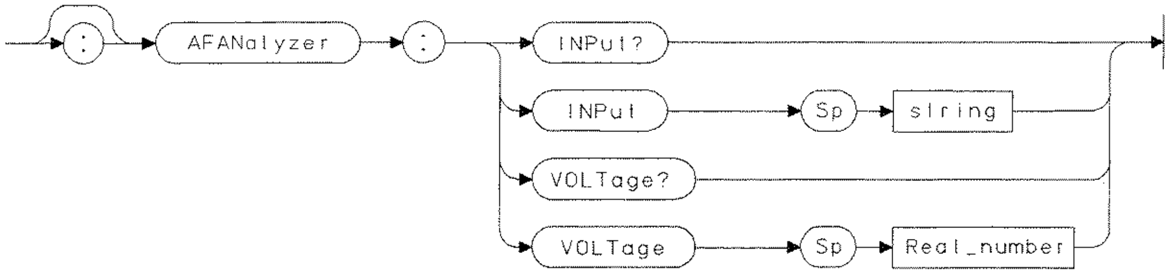
Bit 3 is asserted whenever there is an inconsistency between the fixed part's dummy bearer and traffic bearer carrier/slot settings.

Bit 4 is asserted whenever there is an active traffic bearer setting; traffic bearer connected.

Bit 5 is asserted whenever there is an active dummy bearer in existence; either one being transmitted or when synchronized/locked to a received one.

AFANalyzer Subsystem

This subsystem analyses the audio applied to the INPUT port



AFANalyzer Syntax Diagram

AFANalyzer:INPut

This command Selects the audio analyzer measurement port.

Command Syntax

AFANalyzer:INPut <string>
Where <string> is 'AUDIO IN' | 'Rx Audio'.

Example Statements

```
OUTPUT 714;"AFANalyzer:INPut 'AUDIO IN'"
OUTPUT 714;"AFANalyzer:INPut 'Rx Audio'"
```

Query Syntax

AFANalyzer:INPut?

Return Format

String

AFANalyzer:VOLTage

This command toggles the voltage measurement 'AC'| 'DC'.

Command Syntax

AFANalyzer:VOLTage <string>
  Where <string> has values 'AC' | 'DC'

Example Statements

```
OUTPUT 714;"AFANalyzer:VOLTage 'AC'"
OUTPUT 714;"AFANalyzer:VOLTage 'DC'"
```

Query Syntax

AFANalyzer:VOLTage?

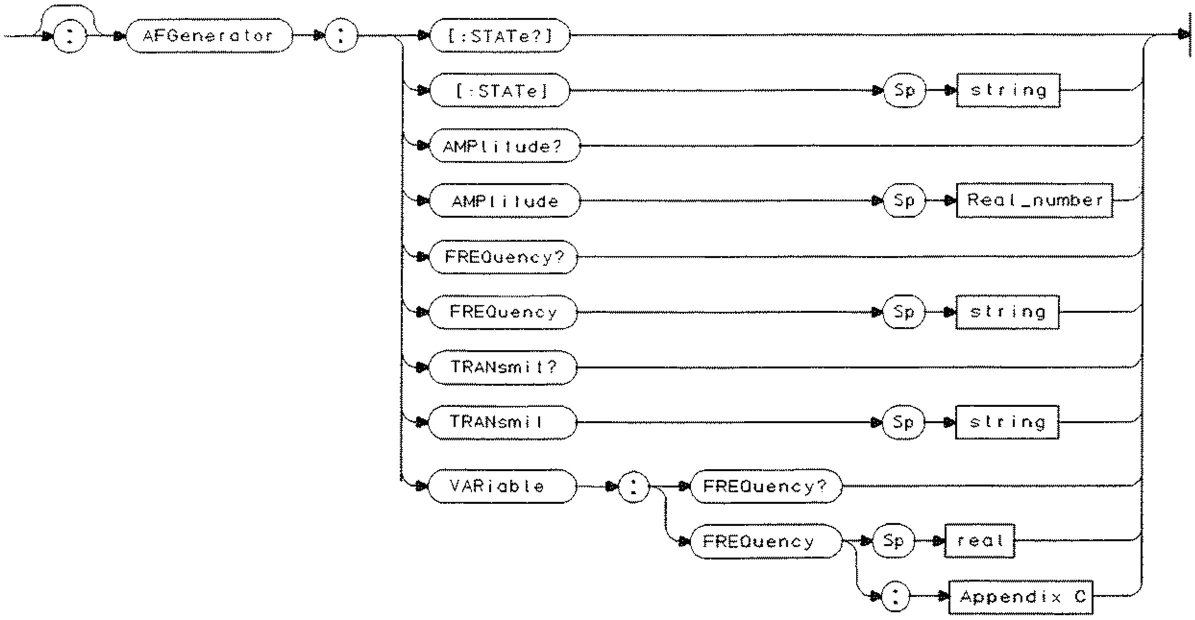
Return Format

String

8

AFGenerator Subsystem

This subsystem controls the instruments audio frequency generator.



AFGenerator Syntax Diagram

AFGenerator[:STATe]

This command switches the audio frequency output on or off.

Command Syntax

AFGenerator[:STATe] <boolean>
Where <boolean> = 'ON' | 'OFF'

Example Statements

```
OUTPUT 714;"AFGenerator[:STATe] 'ON'"
OUTPUT 714;"AFGenerator[:STATe] 'OFF'"
```

Query Syntax

AFGenerator[:STATe]?

Return Format

Boolean

AFGenerator:AMPLitude

Sets the amplitude of the audio signal.

Command Syntax

AFGenerator:AMPLitude <real>
Where <real> = 0 to 2

Example Statements

```
OUTPUT 714;"AFGenerator:AMPLitude 0.005V"
OUTPUT 714;"AFGenerator:AMPLitude 1.1V"
```

Query Syntax

AFGenerator:AMPLitude?

Return Format

Real

AFGenerator:FREQuency

This command sets the frequency of the audio generator.

Command Syntax

AFGenerator:FREQuency <audio_freq>
Where <audio_freq> = '400HZ' | '1KHZ'

Example Statements

```
OUTPUT 714;"AFGenerator:FREQuency '400HZ'"
OUTPUT 714;"AFGenerator:FREQuency '1KHZ'"
```

Query Syntax

AFGenerator:FREQuency?

Return Format

String

AFGenerator:TRANsmit

Connects/disconnects the AF source to/from the CODEC input/mouthpiece.

Command Syntax

AFGenerator:TRANsmit <string> or
AFGenerator:TX <string>
Where <string> is 'Yes' | 'No'.

Example Statements

```
OUTPUT 714;"AFGenerator:TRANsmit 'Yes'"
OUTPUT 714;"AFGenerator:TRANsmit 'No'"
OUTPUT 714;"AFGenerator:TX 'Yes'"
OUTPUT 714;"AFGenerator:TX 'No'"
```

Query Syntax

AFGenerator:TRANsmit? or
AFGenerator:TX?

Return Format

String

AFGenerator:TX

Connects/disconnects the AF source to/from the CODEC input/mouthpiece.

Command Syntax

AFGenerator:TRANsmit <string> or
AFGenerator:TX <string>
Where <string> is 'Yes' | 'No'.

Example Statements

```
OUTPUT 714;"AFGenerator:TRANsmit 'Yes'"
OUTPUT 714;"AFGenerator:TRANsmit 'No'"
OUTPUT 714;"AFGenerator:TX 'Yes'"
OUTPUT 714;"AFGenerator:TX 'No'"
```

Query Syntax

AFGenerator:TRANsmit? or
AFGenerator:TX?

Return Format

String

AFGenerator:VARiable:FREQuency

Sets the frequency of the variable source.

Command Syntax

AFGenerator:VARiable:FREQuency <real>
  Where <real> = 100 to 21000

Example Statements

```
OUTPUT 714;"AFGenerator:FREQuency 100HZ"
OUTPUT 714;"AFGenerator:FREQuency 21KHZ"
```

Query Syntax

AFGenerator:FREQuency?

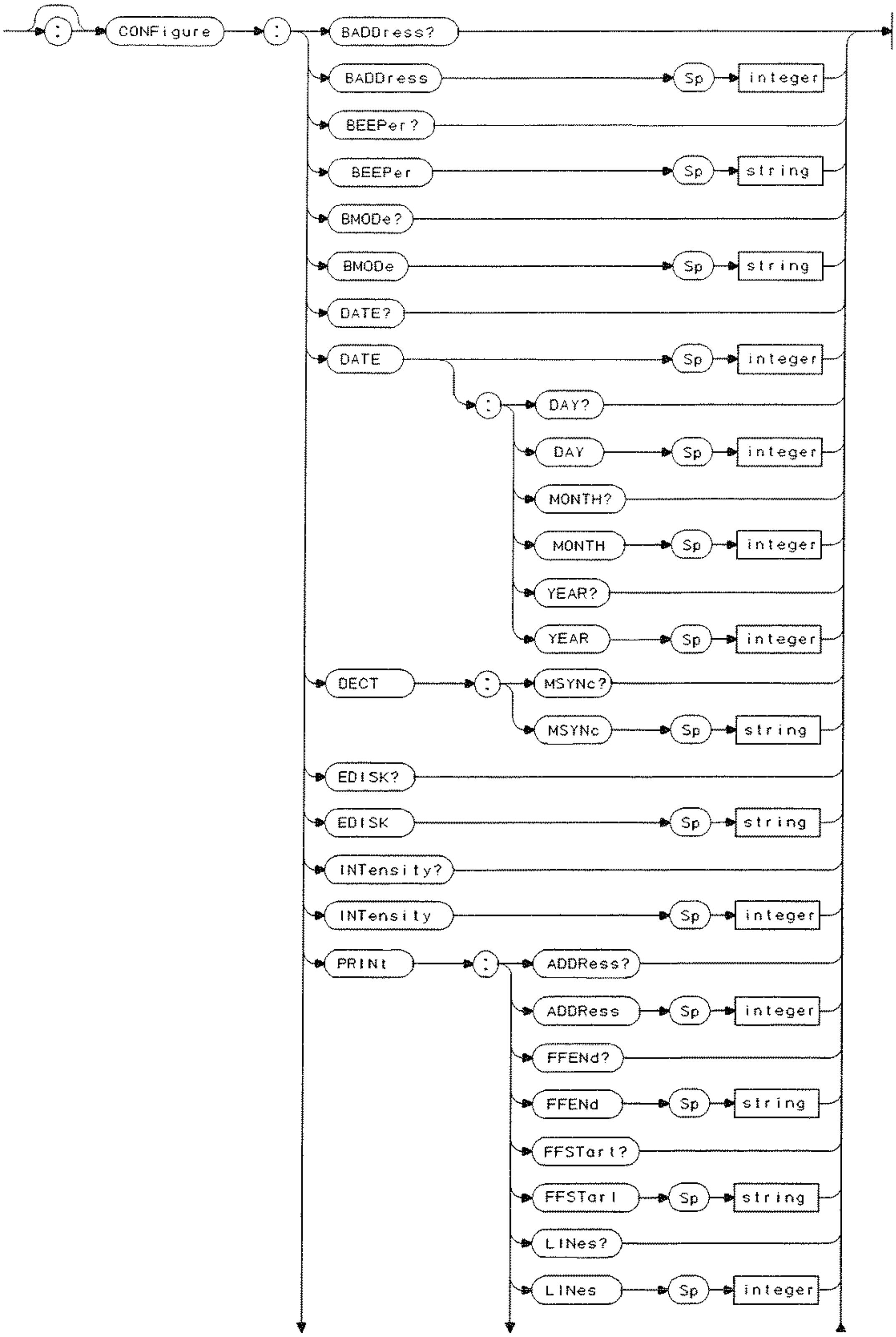
Return Format

String

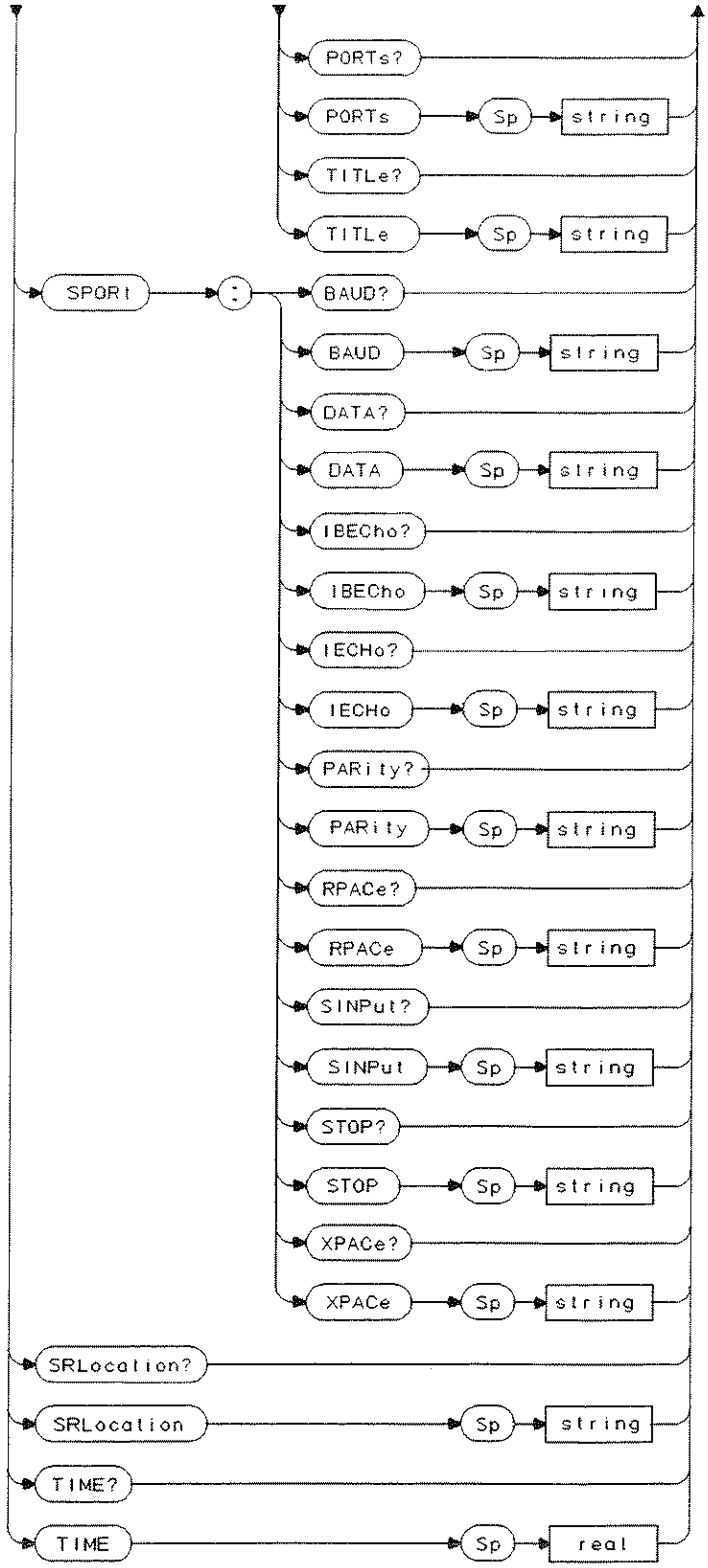
10

CONFigure Subsystem

This subsystem configures various HP 8923B auxiliary controls.



CONFigure Syntax Diagram



CONFigure Syntax Diagram

CONFigure:BADDress

This command sets the HP 8923B's HP-IB address.

Command Syntax

CONFigure:BADDress <value>
Where <value> = XX
XX - address 0 through 30

Example Statements

```
OUTPUT 714;"CONFigure:BADDress 14"
```

Query Syntax

CONFigure:BADDress?

Return Format

Integer

CONFigure:BEEPer

This command sets the volume of the instrument beeper.

Command Syntax

CONFigure:BEEPer <beeper_value>
Where <beeper_value> = 'Off' | 'Quiet' | 'Loud'

Example Statements

```
OUTPUT 714;"CONFigure:BEEPer 'Off'"
OUTPUT 714;"CONFigure:BEEPer 'Quiet'"
OUTPUT 714;"CONFigure:BEEPer 'Loud'"
```

Query Syntax

CONFigure:BEEPer?

Return Format

String

CONFigure:BMODe

This command sets the instrument's HP-IB to talk & listen mode or control mode.

The talk & listen mode is set when the instrument is being controlled from an external computer. The "controller" mode is set when the HP 8923B I-BASIC is controlling external instruments via HP-IB.

Command Syntax

CONFigure:BMODe <ibasic_mode>
  Where < ibasic_mode> = 'Talk&Lstn' | 'Control'

Example Statements

```
OUTPUT 714;"CONFigure:BMODe 'Control'"
OUTPUT 714;"CONFigure:BMODe 'Talk&Lstn'"
```

Query Syntax

CONFigure:BMODe?

Return Format

String

CONFigure:DATE

This command sets the current date used by the HP 8923B clock.

Command Syntax

CONFigure:DATE <value>
 Where <value> = YYYYMMDD
 MM - month
 DD - day
 YYYY - year

Example Statements

`OUTPUT 714;"CONFigure:DATE 19951225"` - 25th December 1995

Query Syntax

CONFigure:DATE?

Return Format

Integer

CONFigure:DATE:YEAR

This command sets the current year used by the HP 8923B clock.

Command Syntax

CONFigure:DATE:YEAR <value>
Where <value> = YYYY
YYYY - year

Example Statements

`OUTPUT 714;"CONFigure:DATE:YEAR 1996"` - 1996

Query Syntax

CONFigure:DATE:YEAR?

Return Format

Integer

CONFigure:DATE:MONTH

This command sets the current date used by the HP 8923B clock.

Command Syntax

CONFigure:DATE:MONTH <value>
  Where <value> = MM
  MM - month

Example Statements

`OUTPUT 714;"CONFigure:DATE:MONTH 12"` - December

Query Syntax

CONFigure:DATE:MONTH?

Return Format

Integer

CONFigure:DATE:DAY

This command sets the current date used by the HP 8923B clock.

Command Syntax

CONFigure:DATE:DAY <value>
Where <value> = DD
DD - day

Example Statements

`OUTPUT 714;"CONFigure:DAY 25"` - 25th

Query Syntax

CONFigure:DATE:DAY?

Return Format

Integer

CONFigure:DECT:MSYNc

This command sets the HP 8923B to either output a multiframe synchronization signal (Master) or to treat it as an input and synchronize to it (slave). This signal is sent through the SYNC OUT and SYNC IN connectors on the rear panel.

Note This control is only effective when testing portable parts. When testing fixed parts, the HP 8923B synchronizes to a bearer transmitted by the fixed part.

Command Syntax

CONFigure:DECT:MSYNc <string>
Where <string> = 'Master' | 'Slave'

Example Statement

```
OUTPUT 714;"CONFigure:DECT:MSYNc 'Master'"
```

Query Syntax

CONFigure:DECT:MSYNc?

Return Format

String

CONFigure:EDISk

This configures the HP 8923B to interface with an external HP-IB disk drive.

Command Syntax

CONFigure:EDISk <disk_parameter>
Where <disk_parameter> = WXY,Z
W = 7 (HP-IB select code)
XY = 0 through 31 (address)
Z = 0 (left-hand disk drive) or 1 (right-hand drive)

Example Statements

```
OUTPUT 714;"CONFigure:EDISk:,702,0'"
```

Query Syntax

CONFigure:EDISk?

Return Format

String

CONFigure:INTensity

This command sets the instrument display intensity.

Command Syntax

CONFigure:INTensity <value>
Where <value> = 1 through 8
1 - dim
8 - bright

Example Statements

```
OUTPUT 714;"CONFigure:INTensity 7"
```

Query Syntax

CONFigure:INTensity?

Return Format

Integer

CONFigure:PRINt:ADDRess

This command sets the HP-IB address of an external HP-IB printer.

Command Syntax

CONFigure:PRINt:ADDRess <address>
  Where the <address> = 1 through 30

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:ADDRess 1"
```

Query Syntax

CONFigure:PRINt:ADDRess?

Return Format

Integer

CONFigure:PRINt:FFENd

This command activates/deactivates the form-feed at the end of a printout.

Command Syntax

CONFigure:PRINt:FFENd <string>
  Where <string> = 'Yes' | 'No'

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:FFENd 'Yes'"
```

Query Syntax

CONFigure:PRINt:FFENd?

Return Format

String

CONFigure:PRINt:FFSTart

This command activates/deactivates the form-feed at the start of a printout.

Command Syntax

CONFigure:PRINt:FFSTart <string>
  Where <string> = 'Yes' | 'No'

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:FFSTart 'Yes'"
```

Query Syntax

CONFigure:PRINt:FFSTart?

Return Format

String

CONFigure:PRINt:LINes

This command sets the number of lines per page for the print out.

Command Syntax

CONFigure:PRINt:LINes <value>
 Where <value> = 20 through 120

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:LINes 66"
```

Query Syntax

CONFigure:PRINt:LINes?

Return Format

Integer

CONFigure:PRINt:PORTs

This command sets the destination output port for the printer.

Command Syntax

CONFigure:PRINt:PORTs <string>
Where the <string> is 'Serial' | 'HP-IB'

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:PORTs 'Serial'"
```

Query Syntax

CONFigure:PRINt:PORTs?

Return Format

String

CONFigure:PRINt:DESTination

This command sets the destination output port for the printer.

Command Syntax

CONFigure:PRINt:DESTination <string>
  Where the <string> is 'Serial' | 'HP-IB'

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:DESTination 'Serial'"
```

Query Syntax

CONFigure:PRINt:DESTination?

Return Format

String

CONFigure:PRINt:TITLe

This command sets up the one line title that will appear on the first line of a print out.

Command Syntax

CONFigure:PRINt:TITLe <string>
Where <string> is a maximum of 50 characters long.

Example Statements

```
OUTPUT 714;"CONFigure:PRINt:TITLe 'BER Results'"
```

Query Syntax

CONFigure:PRINt:TITLe?

Return Format

String

CONFigure:SPORt:BAUD

This command sets the baud rate for the rear panel I-BASIC/print serial port.

Command Syntax

CONFigure:SPORt:BAUD <string>
Where <string> is '19200' | '9600' | '4800' | '2400' | '1200' | '600' | '300' | '150'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:BAUD '19200'"
OUTPUT 714;"CONFigure:SPORt:BAUD '2400'"
```

Query Syntax

CONFigure:SPORt:BAUD?

Return Format

String

CONFigure:SPORt:DATA

This command sets the number of data bits for the rear panel I-BASIC/print serial port.

Command Syntax

CONFigure:SPORt:DATA <data_length>
  Where <data_length> = '7 bits' | '8 bits'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:DATA '8 bits'"
```

Query Syntax

CONFigure:SPORt:DATA?

Return Format

String

CONFigure:SPORt:IBECho

This command activates/deactivates echoing of received I-BASIC commands to the I-BASIC/print serial port.

Command Syntax

CONFigure:SPORt:IBECho <string>
  Where <string> = 'On' | 'Off'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:IBECho 'On'"
OUTPUT 714;"CONFigure:SPORt:IBECho 'Off'"
```

Query Syntax

CONFigure:SPORt:IBECho?

Return Format

String

CONFigure:SPORt:IECHo

This command activates/deactivates echoing of received instrument commands to the I-BASIC/print serial port.

Command Syntax

CONFigure:SPORt:IECHo <string>
  Where <string> = 'On' | 'Off'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:IECHo 'On'"
OUTPUT 714;"CONFigure:SPORt:IECHo 'Off'"
```

Query Syntax

CONFigure:SPORt:IECHo?

Return Format

String

CONFigure:SPORt:PARity

This command selects the parity used for the I-BASIC/print serial port.

Command Syntax

CONFigure:SPORt:PARity <string>
  Where <string> = 'None' | 'Odd' | 'Even' | 'Always 1' | 'Always 0'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:PARity 'None'"
```

Query Syntax

CONFigure:SPORt:PARity?

Return Format

String

CONFigure:SPORt:RPACe

This command sets the receiver pace for the I-BASIC/print serial port data transfer.

Command Syntax

CONFigure:SPORt:RPACe <string>
Where <string> = 'None' | 'Xon/Xoff'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:RPACe 'Xon/Xoff'"
```

Query Syntax

CONFigure:SPORt:RPACe?

Return Format

String

CONFigure:SPORt:SINPut

This command sets up the destination of the commands sent to the I-BASIC/print serial port. Commands can be input to the instrument or to I-BASIC.

Note Another method of writing this command exists. This command is completely interchangable with CONFigure:SPORt:SINPut. The command is:

```
CONFigure:SPORt:SIN
```

Command Syntax

CONFigure:SPORt:SINPut <string>
or
CONFigure:SPORt:SIN <string>
Where <string> = 'Inst' | 'IBASIC'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:SINPut 'Inst'"
OUTPUT 714;"CONFigure:SPORt:SIN 'IBASIC'"
```

Query Syntax

CONFigure:SPORt:SINPut?
or
CONFigure:SPORt:SIN?

Return Format

String

CONFigure:SPORt:STOP

This command sets the number of stop bits for the I-BASIC/print serial port data transfer.

Command Syntax

CONFigure:SPORt:STOP <stop_length>
  Where <stop_length> = '1 bit' | '2 bits'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:STOP '1 bit'"
```

Query Syntax

CONFigure:SPORt:STOP?

Return Format

String

CONFigure:SPORt:XPACe

This command sets up the transmitted pace of the I-BASIC/PRINT serial port for data transfer.

Command Syntax

CONFigure:SPORt:XPACe <string>
Where <string> = 'None' | 'Xon/Xoff'

Example Statements

```
OUTPUT 714;"CONFigure:SPORt:XPACe 'Xon/Xoff'"
```

Query Syntax

CONFigure:SPORt:XPACe?

Return Format

String

CONFigure:SRLocation

This command sets location of the save/recall register.

Command Syntax

CONFigure:SRLocation <string>
Where <string> = 'Internal' | 'Card' | 'RAM' | 'Disk'

Example Statements

```
OUTPUT 714;"CONFigure:SRLocation 'Card'"
```

Query Syntax

CONFigure:SRLocation?

Return Format

String

CONFigure:TIME

This command sets the HP 8923B clock.

Command Syntax

CONFigure:TIME <value>
Where <value> = HH.MM
HH - hours
MM - minutes

Example Statements

```
OUTPUT 714;"CONFigure:TIME 17.05"
```

Query Syntax

CONFigure:TIME?

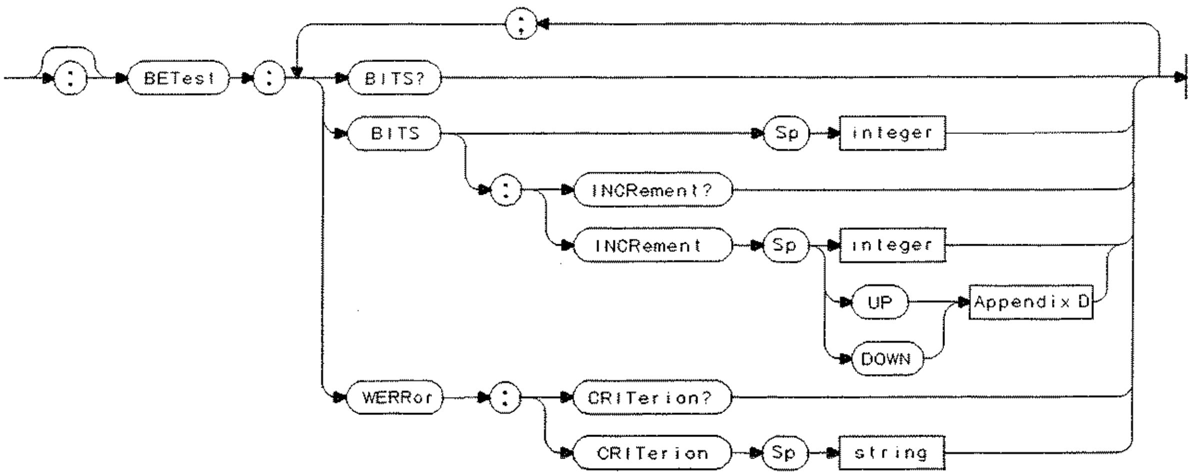
Return Format

Real

9

BETest Subsystem

This subsystem controls the bit error ratio measurements.



BETest Syntax Diagram

BETest:BITS

Sets the number of bits to be tested in a BER measurement.

Command Syntax

BETest:BITS <bit_number>
Where <bit_number> is an integer from 320 through $10^9 - 1$

Example Statements

```
OUTPUT 714;"BETest:BITS 100000"
```

Query Syntax

BETest:BITS?

Return Format

Integer

BETest:BITS:INCRement

Sets the increment of the amount of bits that are to be tested in a BER measurement.

Command Syntax

BETest:BITS:INCRement <increment_parameter> or <integer>
Where <increment_command> = DOWN | UP
Where <integer> = 0 to $10^9 - 1$

Example Statements

```
OUTPUT 714;"BETest:BITS:INCRement DOWN"
OUTPUT 714;"BETest:BITS:INCRement UP"
OUTPUT 714;"BETest:BITS:INCRement 100"
```

Query Syntax

BETest:BITS:INCRement?

Return Format

Integer

Appendix D for additional related commands.

BETest:WERRor:CRITerion

This command selects the detection method for a word error. See "Making Measurements" section in the HP 8923B DECT Test Set User's Guide for details of the methods "Threshold" and "No-B-field".

Command Syntax

BETest:WERRor:CRITerion: <string>
Where <string> = 'Threshold' | 'No-B-field'

Example Statements

```
OUTPUT 714;"BETest:WERRor:CRITerion 'No-B-field'"
OUTPUT 714;"BETest:WERRor:CRITerion 'Threshold'"
```

Query Syntax

BETest:WERRor:CRITerion?

Return Format

String

11

DECT Subsystem

This chapter describes all the commands related to establishing and maintaining a communication link with a DECT Fixed Part or Portable Part.

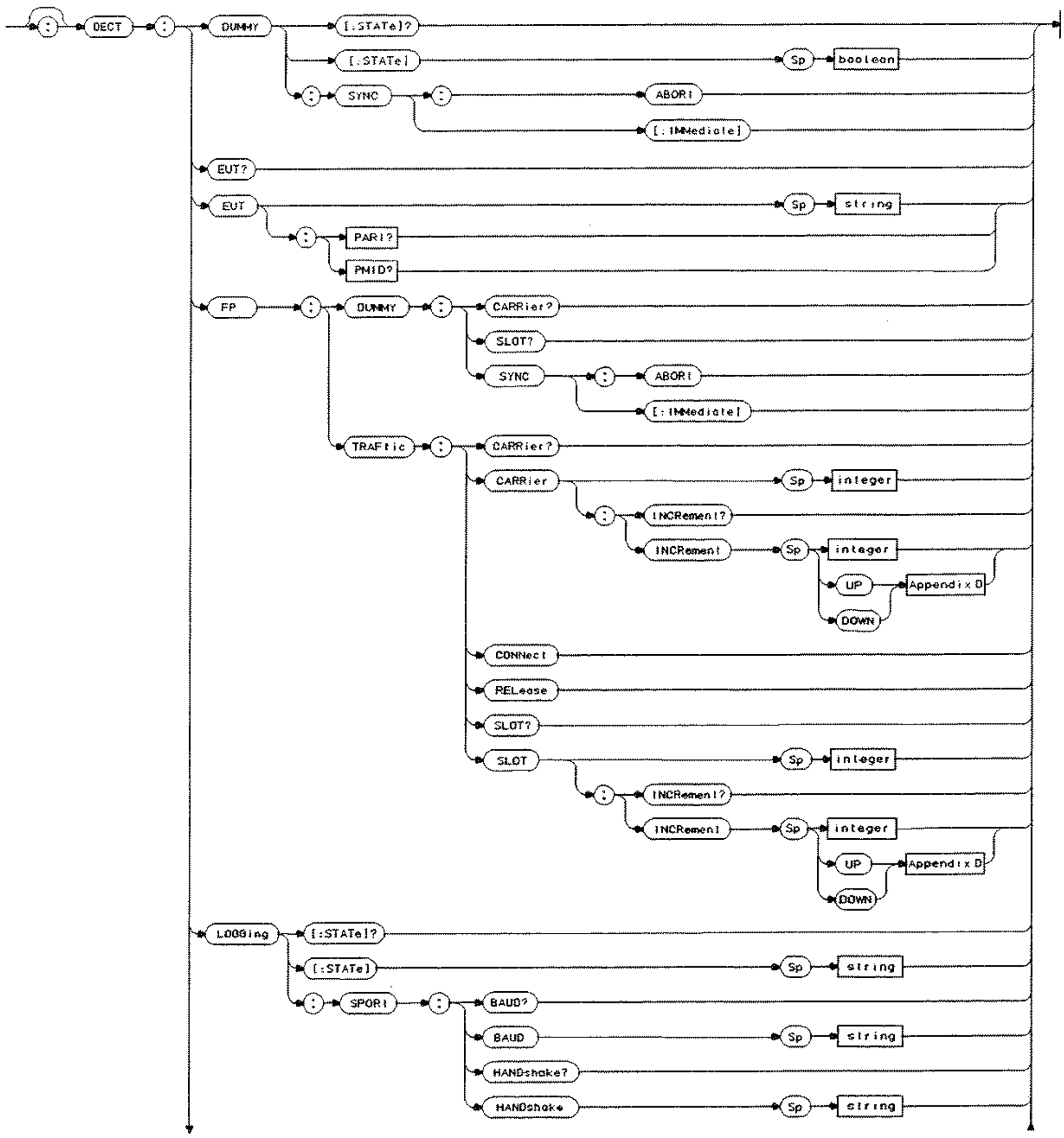


Figure 11-1. DECT Syntax Diagram

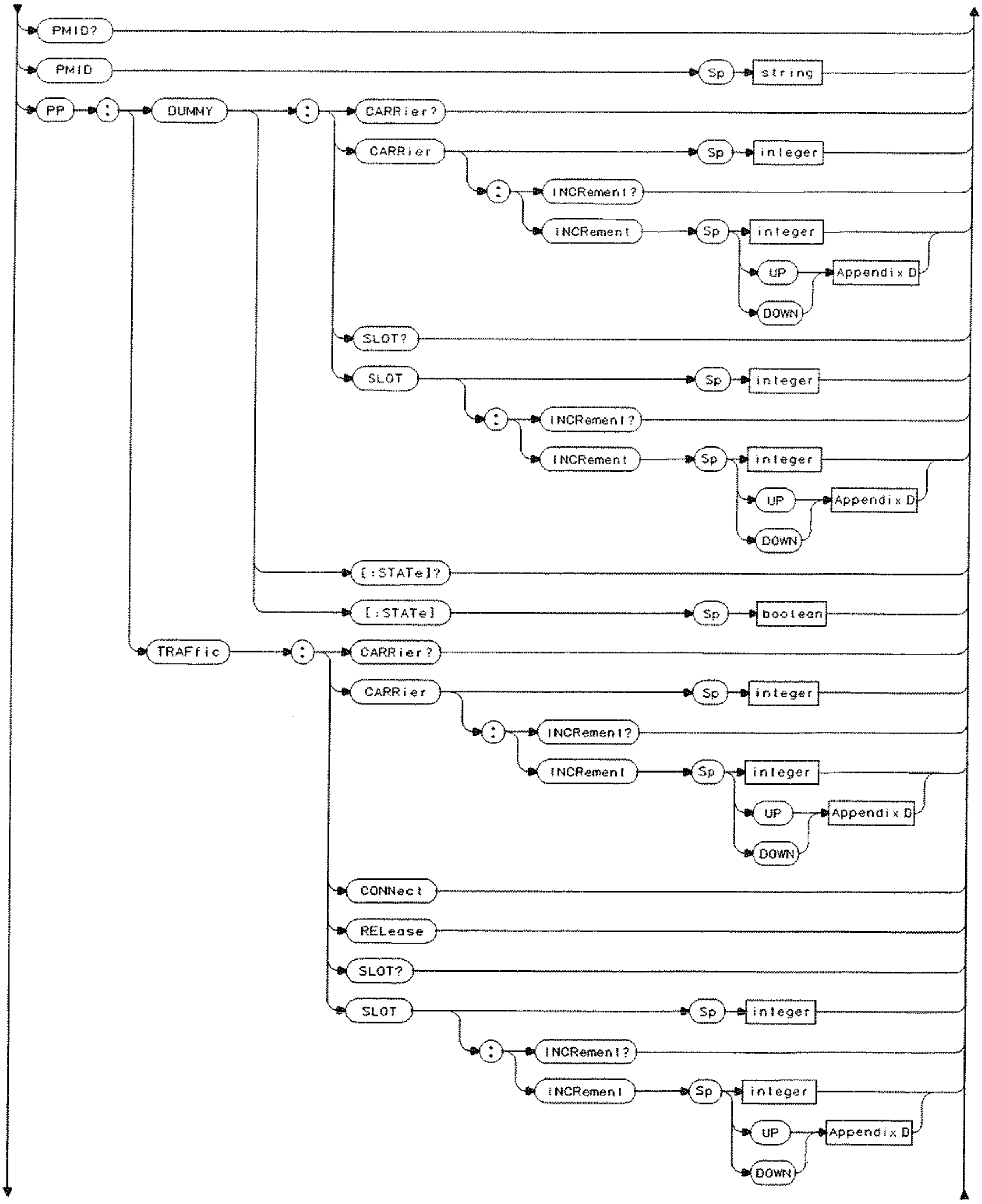


Figure 11-2. DECT Syntax Diagram

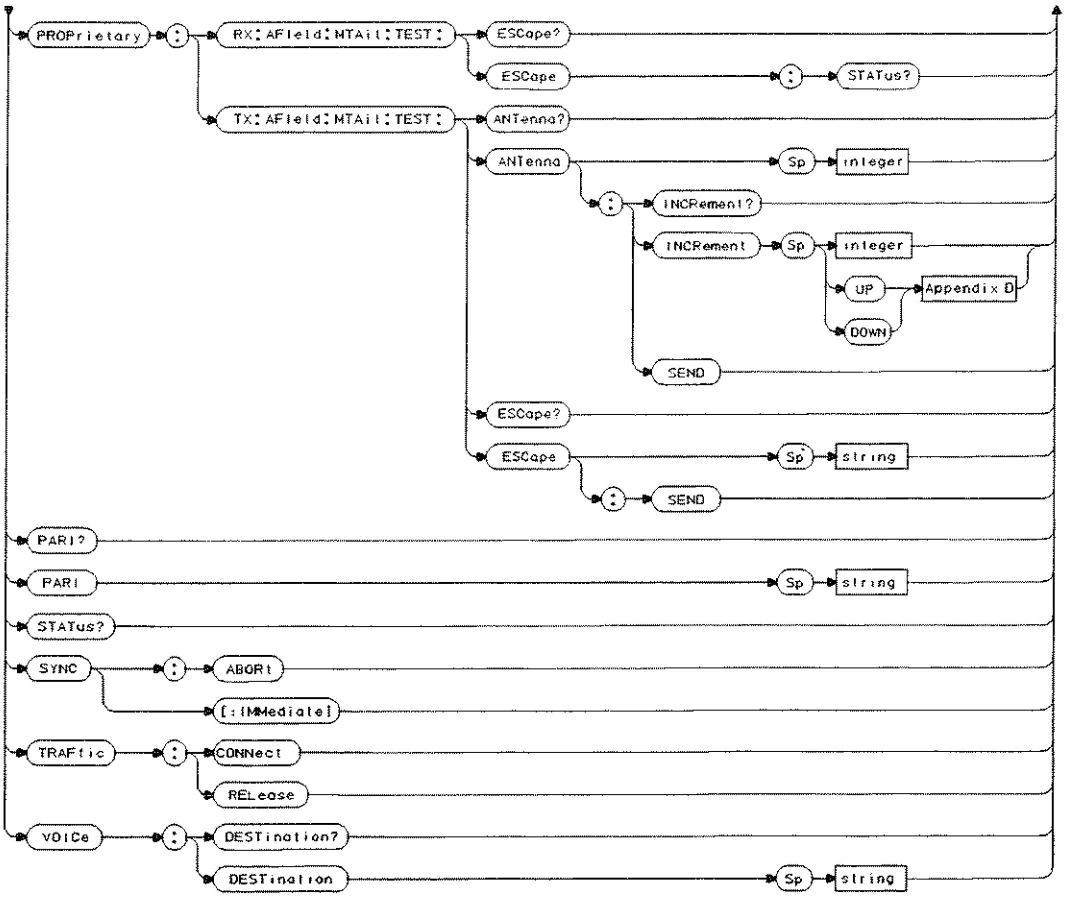


Figure 11-3. DECT Syntax Diagram

DECT:DUMMy[:STATe]

This command activates/de-activates the transmission of a dummy bearer.

Command Syntax

DECT:DUMMy <boolean>
or
DECT:DUMMy:STATe <boolean>
Where <boolean> = 0 | 1 | OFF | ON
0 or OFF switches off the dummy bearer
1 or ON switches on the dummy bearer

Example Statements

```
OUTPUT 714;"DECT:DUMMy 1"
or
OUTPUT 714;"DECT:DUMMy:STATe 1"
```

Query Syntax

DECT:DUMMy?
or
DECT:DUMMy:STATe?

Return Format

Boolean

DECT:DUMMy:SYNC:ABORt

This command aborts the HP 8923B's synchronization to the dummy bearer (which is transmitted by the FP).

Note The following commands are equivalent:

```
DECT:SYNC:ABORt
DECT:DUMMy:SYNC:ABORt
DECT:FP:DUMMy:SYNC:ABORt
DECT:FIXed:DUMMy:SYNC:ABORt
```

Command Syntax

DECT:DUMMy:SYNC:ABORt

Example Statements

```
OUTPUT 714;"DECT:DUMMy:SYNC:ABORt"
```

DECT:DUMMy:SYNC[:IMMediate]

This command instructs the HP 8923B to synchronize to the dummy bearer. The command should only be used when the EUT is a fixed part.

Note The following commands are equivalent:

```
DECT:SYNC
DECT:SYNC:IMMediate
DECT:DUMMy:SYNC
DECT:DUMMy:SYNC:IMMEdiate
DECT:FP:DUMMy:SYNC[:IMMEdiate]
DECT:FIXed:DUMMy:SYNC[:IMMEdiate]
```

Command Syntax

DECT:DUMMy:SYNC
or
DECT:DUMmy:SYNC:IMMediate

Example Statements

```
OUTPUT 714;"DECT:DUMmy:SYNC"
or
OUTPUT 714;"DECT:DUMmy:SYNC:IMMediate"
```

DECT:EUT

This command configures the HP 8923B to test either a Portable Part or a Fixed Part.

Command Syntax

DECT:EUT <string>
  Where <string> = 'Portable' | 'Fixed'

Example Statements

```
OUTPUT 714;"DECT:EUT 'Portable'"
OUTPUT 714;"DECT:EUT 'Fixed'"
```

Query Syntax

DECT:EUT?

Return Format

String

DECT:EUT:PARI?

This query returns an 8 or 9 character hex string; the PARI of the EUT (fixed part) being tested.

Query Syntax

DECT:EUT:PARI?

Return Format

String

Example Return String

`000080C64`

Note If there is no EUT connected then the string, `----`, is returned.

DECT:EUT:PMID?

Returns a 5 character hex string; the PMID of the EUT (portable part) being tested.

Query Syntax

DECT:EUT:PMID?

Return Format

String

Example Return String

`49D3A`

Note If there is no EUT connected then the string, `----`, is returned.

DECT:FP:DUMMy:CARRier?

This query returns the RF carrier of the dummy bearer when testing a fixed part. There is no HP 8923B command to set the dummy bearer carrier when testing. The fixed part initiates the dummy bearer.

Note The following commands are equivalent:

```
DECT:FP:DUMMy:CARRier
DECT:FIXed:DUMMy:CARRier
```

Query Syntax

DECT:FIXed:DUMMy:CARRier?
or
DECT:FP:DUMMy:CARRier?

Return Format

String

DECT:FP:DUMMy:SLOT?

This query returns the timeslot for the dummy bearer when testing a fixed part. There is no HP 8923B command to set the dummy bearer timeslot when testing. The fixed part initiates the dummy bearer.

Note The following commands are equivalent:

```
DECT:FP:DUMMy:SLOT
DECT:FIXed:DUMMy:SLOT
```

Query Syntax

DECT:FIXed:DUMMy:SLOT?
or
DECT:FP:DUMMy:SLOT?

Return Format

String

DECT:FP:DUMMy:SYNC:ABORt

This command aborts the synchronization to the dummy bearer when testing a fixed part.

Note The following commands are equivalent:

```
DECT:SYNC:ABORt
DECT:DUMMy:SYNC:ABORt
DECT:FP:DUMMy:SYNC:ABORt
DECT:FIXed:DUMMy:SYNC:ABORt
```

Command Syntax

DECT:FP:DUMMy:SYNC:ABORt

Example Statements

```
OUTPUT 714;"DECT:FP:DUMMy:SYNC:ABORt"
```

DECT:FP:DUMMy:SYNC[:IMMediate]

This command instructs the HP 8923B to synchronize to the dummy bearer. The command should only be used when the EUT is a fixed part.

Note The following commands are equivalent:

```
DECT:SYNC
DECT:SYNC:IMMediate
DECT:FP:DUMMy:SYNC
DECT:FP:DUMMy:SYNC:IMMEdiate
DECT:FIXed:DUMMy:SYNC
DECT:FIXed:DUMMy:SYNC:IMMEdiate
DECT:DUMMy:SYNC:IMMEdiate
DECT:DUMMy:SYNC:IMMEdiate
```

Command Syntax

DECT:FP:DUMMy:SYNC
or
DECT:FP:DUMMy:SYNC:IMMediate
or
DECT:FIXed:DUMMy:SYNC
or
DECT:FIXed:DUMMy:SYNC:IMMediate

Example Statements

```
OUTPUT 714;"DECT:FP:DUMMy:SYNC"
OUTPUT 714;"DECT:FP:DUMMy:SYNC:IMMediate"
OUTPUT 714;"DECT:FIXed:DUMMy:SYNC"
OUTPUT 714;"DECT:FIXed:DUMMy:SYNC:IMMediate"
```

DECT:FP:TRAFfic:CARRier

This command sets the RF carrier position for the traffic bearer when testing a fixed part.

Note The following commands are equivalent:

```
DECT:TRAFfic:CARRier
DECT:FP:TRAFfic:CARRier
DECT:FIXed:TRAFfic:CARRier
```

Command Syntax

DECT:FIXed:TRAFfic:CARRier <integer>
or
DECT:FP:TRAFfic:CARRier <integer>
Where <integer> = 0 through 9

Example Statements

```
OUTPUT 714;"DECT:FIXed:TRAFfic:CARRier 7"
or
OUTPUT 714;"DECT:FP:TRAFfic:CARRier 7"
```

Query Syntax

DECT:FIXed:TRAFfic:CARRier?
or
DECT:FP:TRAFfic:CARRier?

Return Format

Integer

DECT:FP:TRAFfic:CARRier:INCRement

This command controls the increment of the traffic bearer's carrier when testing a fixed part. The command can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:FP:TRAFfic:CARRier:INCRement
DECT:FIXed:TRAFfic:CARRier:INCRement
```

Command Syntax

DECT:FIXed:TRAFfic:CARRier:INCRement <increment_parameter> | <value>
or
DECT:FP:TRAFfic:CARRier:INCRement <increment_parameter> | <value>
Where <increment_parameter> = UP | DOWN
Where <value> is an integer.

Example Statements

```
OUTPUT 714;"DECT:FIXed:TRAFfic:CARRier:INCRement UP"
OUTPUT 714;"DECT:FP:TRAFfic:CARRier:INCRement DOWN"
OUTPUT 714;"DECT:FIXed:TRAFfic:CARRier:INCRement 5"
OUTPUT 714;"DECT:FP:TRAFfic:CARRier:INCRement 2"
```

Query Syntax

DECT:FIXed:TRAFfic:CARRier:INCRement?
or
DECT:FP:TRAFfic:CARRier:INCRement?

Return Format

Integer

DECT:FP:TRAFfic:CONNect

This command forces the HP 8923B to initiate a traffic bearer when testing a fixed part.

Note The following commands are equivalent:

```
DECT:TRAFfic:CONNect
DECT:FIXed:TRAFfic:CONNect
```

Command Syntax

DECT:FIXed:TRAFfic:CONNect
or
DECT:FP:TRAFfic:CONNect
or
DECT:TRAFfic:CONNect

Example Statements

```
OUTPUT 714;"DECT:FIXed:TRAFfic:CONNect"
```
or
```
OUTPUT 714;"DECT:FP:TRAFfic:CONNect"
```
or
```
OUTPUT 714;"DECT:TRAFfic:CONNect"
```

DECT:FP:TRAFfic:RELease

This command forces the HP 8923B to release the current traffic bearer.

Note The following commands are equivalent:

```
DECT:TRAFfic:RELease
DECT:FP:TRAFfic:RELease
DECT:FIXed:TRAFfic:RELease
```

Command Syntax

DECT:FIXed:TRAFfic:RELease
or
DECT:FP:TRAFfic:RELease
or
DECT:TRAFfic:RELease

Example Statements

```
OUTPUT 714;"DECT:FIXed:TRAFfic:RELease"
```
or
```
OUTPUT 714;"DECT:FP:TRAFfic:RELease"
```
or
```
OUTPUT 714;"DECT:TRAFfic:RELease"
```

DECT:FP:TRAFfic:SLOT

This command sets the timeslot for the traffic bearer when testing a fixed part.

Note The following commands are equivalent:

```
DECT:FP:TRAFfic:SLOT
DECT:FIXed:TRAFfic:SLOT
```

Command Syntax

DECT:FIXed:TRAFfic:SLOT <integer>
or
DECT:FP:TRAFfic:SLOT <integer>
Where <integer> = 0 through 11

Example Statements

```
OUTPUT 714;"DECT:FIXed:TRAFfic:SLOT 5"
or
OUTPUT 714;"DECT:FP:TRAFfic:SLOT 5"
```

Query Syntax

DECT:FIXed:TRAFfic:SLOT?
or
DECT:FP:TRAFfic:SLOT?

Return Format

Integer

DECT:FP:TRAFfic:SLOT:INCRement

This command controls the increment of the traffic bearer's timeslot when testing a fixed part. The command can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:FP:TRAFfic:SLOT:INCRement
DECT:FIXed:TRAFfic:SLOT:INCRement
```

Command Syntax

DECT:FIXed:TRAFfic:SLOT:INCRement <increment_parameter> | <value>
or
DECT:FP:TRAFfic:SLOT:INCRement <increment_parameter> | <value>
Where <increment_parameter> = UP | DOWN
Where <value> = an integer from 0 through 11 inclusive.

Example Statements

```
OUTPUT 714;"DECT:FIXed:TRAFfic:SLOT:INCRement 4"
or
OUTPUT 714;"DECT:FP:TRAFfic:SLOT:INCRement 4"
```

Query Syntax

DECT:FIXed:TRAFfic:SLOT:INCRement?
or
DECT:FP:TRAFfic:SLOT:INCRement?

Return Format

Integer

DECT:LOGGing[:STATe]

This command activates/deactivates the DECT protocol logging.

Command Syntax

DECT:LOGGing <string>
or
DECT:LOGGing:STATe <string>
Where <string> = 'ON' | 'OFF'

Example Statements

```
OUTPUT 714;"DECT:LOGGing 'ON'"
```
or
```
OUTPUT 714;"DECT:LOGGing:STATe 'ON'"
```

Query Syntax

DECT:LOGGing?
or
DECT:LOGGing:STATe?

Return Format

String

DECT:LOGGing:SPORt:BAUD

This command sets the baud rate for the protocol logging period.

Command Syntax

DECT:LOGGing:SPORt:BAUD <string>
Where <string> = '19200' | '9600' | '1200' | '300'

Example Statements

```
OUTPUT 714;"DECT:LOGGing:SPORt:BAUD '9600'"
```

Query Syntax

DECT:LOGGing:SPORt:BAUD?

Return Format

String

DECT:LOGGing:SPORt:HANDshake

This command sets the receiver pace for the protocol logging serial port.

Command Syntax

DECT:LOGGing:SPORt:HANDshake <string>
  Where <string> = 'None' | 'Xon/Xoff'

Example Statements

```
OUTPUT 714;"DECT:LOGGing:SPORt:HANDshake 'Xon/Xoff"
```

Query Syntax

DECT:LOGGing:SPORt:HANDshake?

Return Format

String

DECT:PARI

This command sets the Primary Access Rights Identity.

Command Syntax

DECT:PARI <string>
Where <string> = '9 hexadecimal characters' or '8 hexadecimal characters'

Example Statements

```
OUTPUT 714;"DECT:PARI '0000A9D3A'"
```

Query Syntax

DECT:PARI?

Return Format

String

DECT:PMID

This command sets the Portable Part MAC Identity. This is a five character hexadecimal number, which is entered as a string.

Command Syntax

DECT:PMID <string>
Where <string> = '5 hexadecimal digits'

Example Statements

```
OUTPUT 714;"DECT:PMID 'ABCDE'"
```

Query Syntax

DECT:PMID?

Return Format

String

DECT:PP:DUMMy[:STATe]

This command sets the dummy bearer state to on or off.

Note The following commands are equivalent:

```
DECT:DUMMy
DECT:DUMMy:STATe
DECT:PP:DUMMy
DECT:PP:DUMMy:STATe
DECT:PORTable:DUMMy
DECT:PORTable:DUMMy:STATe
```

Controlling the position of the dummy bearer is only relevant when testing a DECT portable part.

Command Syntax

DECT:PP:DUMMy:STATe <boolean_parameter>
DECT:PORTable:DUMMy:STATe <boolean_parameter>
DECT:PP:DUMMy <boolean_parameter>
DECT:PORTable:DUMMy <boolean_parameter>
Where <boolean_parameter> = 0 | 1 | OFF | ON

Example Statement

```
OUTPUT 714;"DECT:PP:DUMMy:STATe ON"
OUTPUT 714;"DECT:PORTable:DUMMy:STATe ON"
OUTPUT 714;"DECT:PP:DUMMy ON"
OUTPUT 714;"DECT:PORTable:DUMMy ON"
```

Query Syntax

DECT:PP:DUMMy:STATe?
DECT:PORTable:DUMMy:STATe?
DECT:PP:DUMMy?
DECT:PORTable:DUMMy?

Return Format

Boolean

DECT:PP:DUMMy:CARRier

This command sets the RF carrier position for the dummy bearer when testing a portable part..

Note The following commands are equivalent:

```
DECT:PP:DUMMy:CARRier
DECT:PORTable:DUMMy:CARRier
```

Command Syntax

DECT:PORTable:DUMMy:CARRier <integer>
or
DECT:PP:DUMMy:CARRier <integer>
Where <integer> = 0 | 9

Example Statements

```
OUTPUT 714;"DECT:PORTable:DUMMy:CARRier 7"
or
OUTPUT 714;"DECT:PP:DUMMy:CARRier 7"
```

Query Syntax

DECT:PORTable:DUMMy:CARRier?
or
DECT:PP:DUMMy:CARRier?

Return Format

Integer

DECT:PP:DUMMy:CARRier:INCRement

This command controls the increment of the traffic bearer's carrier when testing a portable part. This can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:PP:DUMMy:CARRier:INCRement
DECT:PORTable:DUMMy:CARRier:INCRement
```

Command Syntax

DECT:PORTable:DUMMy:CARRier:INCRement <increment_parameter> | <value>
or
DECT:PP:DUMMy:CARRier:INCRement <increment_parameter> | <value>
Where <increment_parameter> = UP | DOWN
Where <value> is an integer.

Example Statements

```
OUTPUT 714;"DECT:PORTable:DUMMy:CARRier:INCRement UP"
OUTPUT 714;"DECT:PP:DUMMy:CARRier:INCRement DOWN"
OUTPUT 714;"DECT:PORTable:DUMMy:CARRier:INCRement 2"
OUTPUT 714;"DECT:PP:DUMMy:CARRier:INCRement 2"
```

Query Syntax

DECT:PORTable:DUMMy:CARRier:INCRement?
or
DECT:PP:DUMMy:CARRier:INCRement?

Return Format

Integer

DECT:PP:DUMMy:SLOT

This command sets the timeslot position for the dummy bearer.

Note The following commands are equivalent:

```
DECT:PP:DUMMy:SLOT
DECT:PORTable:DUMMy:SLOT
```

Command Syntax

DECT:PORTable:DUMMy:SLOT <integer>
or
DECT:PP:DUMMy:SLOT <integer>
Where <integer> = 0 through 11 inclusive.

Example Statements

```
OUTPUT 714;"DECT:PORTable:DUMMy:SLOT 10"
OUTPUT 714;"DECT:PP:DUMMy:SLOT 1"
```

Query Syntax

DECT:PORTable:DUMMy:SLOT?
or
DECT:PP:DUMMy:SLOT?

Return Format

Integer

DECT:PP:DUMMy:SLOT:INCRement

This command controls the increment of the dummy bearer's timeslot when testing a portable part. The command can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:PP:DUMMy:SLOT:INCRement
DECT:PORTable:DUMMy:SLOT:INCRement
```

Command Syntax

DECT:PORTable:DUMMy:SLOT:INCRement <increment_parameter> | <integer>
or
DECT:PP:DUMMy:SLOT:INCRement <increment_parameter> | <value>
Where <increment_parameter> = UP | DOWN
Where <value> is an optional number between 0 and 11.

Example Statements

```
OUTPUT 714;"DECT:PORTable:DUMMy:SLOT:INCRement UP"
OUTPUT 714;"DECT:PP:DUMMy:SLOT:INCRement DOWN"
OUTPUT 714;"DECT:PORTable:DUMMy:SLOT:INCRement 0"
OUTPUT 714;"DECT:PP:DUMMy:SLOT:INCRement 1"
```

Query Syntax

DECT:PORTable:DUMMy:SLOT:INCRement?
or
DECT:PP:DUMMy:SLOT:INCRement?

Return Format

Integer

DECT:PP:TRAFfic:CARRier

This command sets the RF carrier of the traffic bearer when testing a portable part.

Note The following commands are equivalent:

```
DECT:PP:TRAFfic:CARRier
DECT:PORTable:TRAFfic:CARRier
```

Command Syntax

DECT:PORTable:TRAFfic:CARRier <integer>
or
DECT:PP:TRAFfic:CARRier <integer>
Where <integer> = 0 through 9

Example Statements

```
OUTPUT 714;"DECT:PORTable:TRAFfic:CARRier 7"
or
OUTPUT 714;"DECT:PP:TRAFfic:CARRier 7"
```

Query Syntax

DECT:PORTable:TRAFfic:CARRier?
or
DECT:PP:TRAFfic:CARRier?

Return Format

Integer

DECT:PP:TRAFfic:CARRier:INCRement

This command controls the increment of the traffic bearer's carrier when testing a portable part. The command can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:PP:TRAFfic:SLOT:INCRement
DECT:PORTable:TRAFfic:SLOT:INCRement
```

Command Syntax

DECT:PORTable:TRAFfic:CARRier:INCRement <increment_parameter> | <integer>
or
DECT:PP:TRAFfic:CARRier:INCRement <increment_parameter> | <value>
Where <increment_parameter>= UP | DOWN
Where <value> = any integer less than 10

Example Statements

```
OUTPUT 714;"DECT:PORTable:TRAFfic:CARRier:INCRement 'DOWN'"
OUTPUT 714;"DECT:PORTable:TRAFfic:CARRier:INCRement 5"
OUTPUT 714;"DECT:PP:TRAFfic:CARRier:INCRement 'UP'"
OUTPUT 714;"DECT:PP:TRAFfic:CARRier:INCRement 2"
```

Query Syntax

DECT:PORTable:TRAFfic:CARRier:INCRement?
or
DECT:PP:TRAFfic:CARRier:INCRement?

Return Format

Integer

DECT:PP:TRAFfic:CONNect

This command causes the HP 8923B to initiate a call/traffic bearer.

Note The following commands are equivalent:

```
DECT:TRAFfic:CONNect
DECT:PP:TRAFfic:CONNect
DECT:PORTable:TRAFfic:CONNect
```

The dummy bearer must be established before making a traffic bearer connection.

Command Syntax

DECT:PORTable:TRAFfic:CONNect
or
DECT:PP:TRAFfic:CONNect
or
DECT:TRAFfic:CONNect

Example Statements

```
OUTPUT 714;"DECT:PORTable:TRAFfic:CONNect"
```
or
```
OUTPUT 714;"DECT:PP:TRAFfic:CONNect"
```
or
```
OUTPUT 714;"DECT:TRAFfic:CONNect"
```

DECT:PP:TRAFfic:RELease

This command causes the HP 8923B to release the current call/traffic bearer.

Note The following commands are equivalent:

```
DECT:TRAFfic:RELease
DECT:PP:TRAFfic:RELease
DECT:PORTable:TRAFfic:RELease
```

Command Syntax

DECT:PORTable:TRAFfic:RELease
or
DECT:PP:TRAFfic:RELease

Example Statements

```
OUTPUT 714;"DECT:PORTable:TRAFfic:RELease"
```
or
```
OUTPUT 714;"DECT:PP:TRAFfic:RELease"
```

DECT:PP:TRAFfic:SLOT

This command sets the timeslot position for the traffic bearer when testing a PP.

Note The following commands are equivalent:

```
DECT:PP:TRAFfic:SLOT
DECT:PORTable:TRAFfic:SLOT
```

Command Syntax

DECT:PORTable:TRAFfic:SLOT <integer>
or
DECT:PP:TRAFfic:SLOT <integer>
Where <integer>= 0 through 11

Example Statements

```
OUTPUT 714;"DECT:PORTable:TRAFfic:SLOT 5"
```
or
```
OUTPUT 714;"DECT:PP:TRAFfic:SLOT 5"
```

Query Syntax

DECT:PORTable:TRAFfic:SLOT?
or
DECT:PP:TRAFfic:SLOT?

Return Format

Integer

DECT:PP:TRAFfic:SLOT:INCRement

This command controls the increment of the traffic bearer's timeslot when testing a portable part. The command can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:PP:TRAFfic:SLOT:INCRement
DECT:PORTable:TRAFfic:SLOT:INCRement
```

Command Syntax

DECT:PORTable:TRAFfic:SLOT:INCRement <increment_parameter> | <value>
or
DECT:PP:TRAFfic:SLOT:INCRement <increment_parameter> | <integer>
Where <increment_parameter> = UP | DOWN
Where <value> = an integer from 0 through 11 inclusive.

Example Statements

```
OUTPUT 714;"DECT:PORTable:TRAFfic:SLOT:INCRement 4"
```
or
```
OUTPUT 714;"DECT:PP:TRAFfic:SLOT:INCRement 4"
```

Query Syntax

DECT:PORTable:TRAFfic:SLOT:INCRement?
or
DECT:PP:TRAFfic:SLOT:INCRement?

Return Format

Integer

DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape?

This query reads the escape test message received from the EUT.

Note The following commands are equivalent:

```
DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape?
DECT:PROPrietary:RECeive:AFIeld:MTAil:TEST:ESCape?
```

Query Syntax

DECT:PROPrietary:RECeive:AFIeld:MTAil:TEST:ESCape?
or
DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape?

Return Format

String

DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape:STATus?

This query reads the status of the received escape message.

The status will be "New" whenever an escape test message has been received but has not been read from the EUT.

The status will be "Old" if the received escape test message has been read.

Note The following commands are equivalent:

```
DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape:STATus?
DECT:PROPrietary:RECeive:AFIeld:MTAil:TEST:ESCape:STATus?
```

Query Syntax

DECT:PROPrietary:RECeive:AFIeld:MTAil:TEST:ESCape:STATus?
or
DECT:PROPrietary:RX:AFIeld:MTAil:TEST:ESCape:STATus?

Return Format

String

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna

This command overrides the antenna value and sets a fixed value to be used in the DEFEAT_ANTENNA_DIVERSITY test message.

Note The following commands are equivalent:

```
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna?
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna?
```

Command Syntax

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna <integer>
or
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna <integer>
Where <integer> = 0 through 7

Example Statements

```
OUTPUT 714;"DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna 2"
```
or
```
OUTPUT 714;"DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna 2"
```

Query Syntax

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna?
or
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna?

Return Format

Integer

DECT:PROPrietary:TX:AField:MTail:TEST:ANTenna:INCRement

This command controls the increment for the antenna diversity control command.

This can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note The following commands are equivalent:

```
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:INCRement?
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:INCRement?
```

Command Syntax

DECT:PROP:TRAN:AFI:MTA:TEST:ANT:INCR <increment_parameter> | <value>
or
DECT:PROP:TX:AFI:MTA:TEST:ANT:INCR <increment_parameter> | <value>
Where <increment_parameter> = UP | DOWN
Where <value> is a integer with a maximum value of six.

Example Statements

```
OUTPUT 714;"DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:INCRement 5"
OUTPUT 714;"DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:INCRement UP"
OUTPUT 714;"DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:INCRement 2"
OUTPUT 714;"DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:INCRement DOWN"
```

Query Syntax

DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:INCRement?
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:INCRement?

Return Format

String

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:SEND

This command sends the DEFEAT_ANTENNA_DIVERSITY test message to the part being tested using the value defined in :TX:AField:MTail:TEST:ANT.

Note The following commands are equivalent:

```
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:SEND
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:SEND
```

Command Syntax

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:SEND
or
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:SEND

Example Statements

```
OUTPUT 714;"DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ANTenna:SEND"
```
or
```
OUTPUT 714;"DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ANTenna:SEND"
```

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape

This command sets the contents of the escape test message, which is to be transmitted to the EUT.

Note The following commands are equivalent:

```
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape?
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape?
```

Command Syntax

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape <string>
or
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape <string>
Where <string> = user definable (8 hexadecimal characters)

Example Statements

```
OUTPUT 714;"DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape 'ABCDEF78'"
or
OUTPUT 714;"DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape 'ABCDEF78'"
```

Query Syntax

DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape?
or
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape?

Return Format

String

DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape:SEND

This command sends the ESCAPE test message to the EUT.

Note The following commands are equivalent:

```
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape:SEND
DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape:SEND
```

Command Syntax

DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape:SEND
or
DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape:SEND

Example Statements

```
OUTPUT 714;"DECT:PROPrietary:TRANsmit:AFIeld:MTAil:TEST:ESCape:SEND"
```
or
```
OUTPUT 714;"DECT:PROPrietary:TX:AFIeld:MTAil:TEST:ESCape:SEND"
```

DECT:STATus?

This query returns the call status field. The status options are for the portable part are:

- Off
- Idle
- Calling
- Connected

The status options are for the fixed part are:

- Off
- Sync
- Locked
- Connected

Query Syntax

DECT:STATus?

Return Format

String

DECT:SYNC[:IMMediate]

This command starts the synchronization to the dummy bearer when testing a fixed part.

Note The following commands are equivalent:

```
DECT:SYNC
DECT:SYNC:IMMediate
DECT:DUMMy:SYNC
DECT:DUMMy:SYNC:IMMediate
DECT:FP:DUMMy:SYNC
DECT:FP:DUMMy:SYNC:IMMediate
DECT:FIXed:DUMMy:SYNC
DECT:FIXed:DUMMy:SYNC:IMMediate
```

Command Syntax

DECT:SYNC:IMMediate

DECT:SYNC:ABORt

This command aborts the synchronization to the dummy bearer.

Note The following commands are equivalent:

```
DECT:SYNC:ABORt
DECT:DUMMy:SYNC:ABORt
DECT:FP:DUMMy:SYNC:ABORt
DECT:FIXed:DUMMy:SYNC:ABORt
```

Command Syntax

DECT:SYNC:ABORt

DECT:TRAFfic:CONNect

This command forces the HP 8923B to initiate a traffic bearer.

Note The following commands are equivalent:

```
DECT:TRAFfic:CONNect
DECT:FP:TRAFfic:CONNect
DECT:FIXed:TRAFfic:CONNect
DECT:PP:TRAFfic:CONNect
DECT:PORTable:TRAFfic:CONNect
```

Command Syntax

DECT:TRAFfic:CONNect

DECT:TRAFfic:RELease

This command forces the HP 8923B to release the current traffic bearer.

Note The following commands are equivalent:

```
DECT:TRAFfic:RELease
DECT:FP:TRAFfic:RELease
DECT:FIXed:TRAFfic:RELease
DECT:PP:TRAFfic:RELease
DECT:PORTable:TRAFfic:RELease
```

Command Syntax

DECT:TRAFfic:RELease

DECT:VOICe:DESTination

This command sets the destination of the received speech/B-Field from the EUT.

Command Syntax

DECT:VOICe:DESTination <string>
  Where <string> = 'None' | 'RearPanel' | 'Echo'

Example Statements

```
OUTPUT 714;"DECT:VOICe:DESTination 'RearPanel'"
```

Query Syntax

DECT:VOICe:DESTination?

Return Format

String

12

DISPlay Subsystem

This chapter describes all the commands related to the screen display of the HP 8923B.

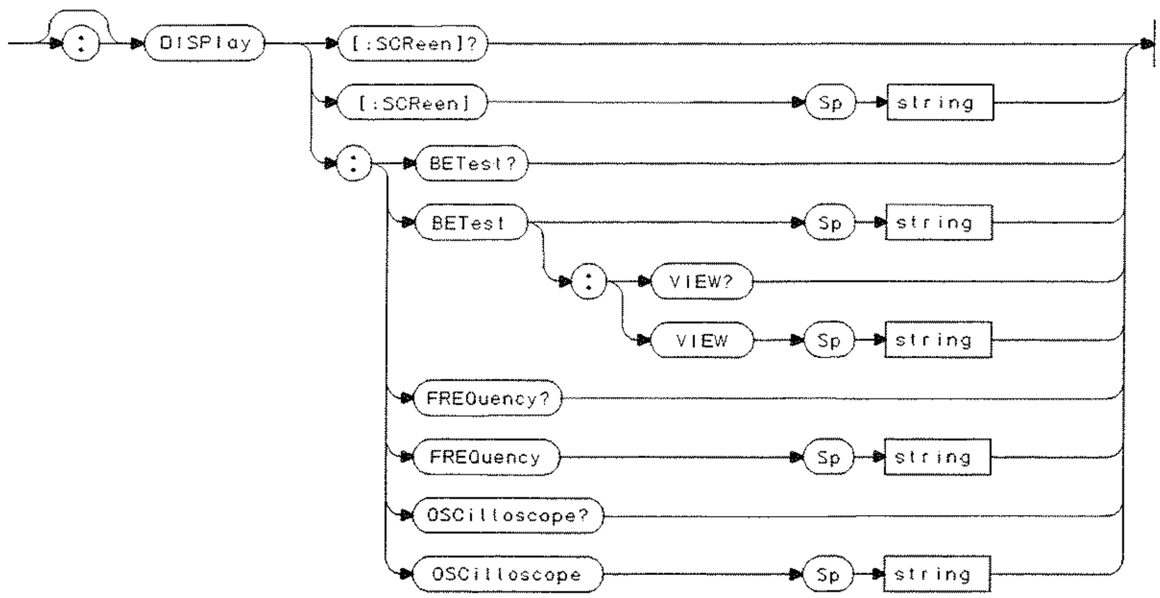


Figure 12-1. DISPlay Syntax Diagram

DISPlay[:SCReen]

This command switches the display to the desired screen.

Command Syntax

DISPlay
or
DISPlay:SCReen <screen_identifier>
Where <screen_identifier> = AUDio | BETest | CALL | CONFigure
DBField | EXTSource | FREQ | HELP | IOConfigure | LOGGing |
MCNTL | MESSage | NTPower | OSCilloscope | PCONfigure |
PROPrietary | PTFall |PTMid | PTRise | PUP | RFParameter |
SERVice | TCONfigure | TESTs | TFReq | TIBasic | TMAKe | TPARm |
TSEQn | TSPec

Example Statements

```
OUTPUT 714;"DISPlay CALL"
```
or
```
OUTPUT 714;"DISPlay:SCReen CALL"
```

Query Syntax

DISPlay?
or
DISPlay:SCReen?

Return Format

String

DISPlay:BETest

This command selects the display of the BER measurement to be either a count or ratio. Count shows the accumulated number of bits/frames in error, ratio shows the ratio of bits/frames in error to bits/frames tested.

Command Syntax

DISPlay:BETest <string>
  Where <string> = 'CNT' | 'RATIO'

Example Statements

```
OUTPUT 714;"DISPlay:BETest 'CNT'"
OUTPUT 714;"DISPlay:BETest 'RATIO'"
```

Query Syntax

DISPlay:BETest?

Return Format

String

DISPlay:BETest:VIEW

This command selects the measurement viewed to be either bit error ratio or word error ratio.

Command Syntax

DISPlay:BETest:VIEW <string>
  Where <string> = 'BER' | 'WER'

Example Statements

```
OUTPUT 714;"DISPlay:BETest:VIEW 'BER'"
OUTPUT 714;"DISPlay:BETest:VIEW 'WER'"
```

Query Syntax

DISPlay:BETest:VIEW?

Return Format

String

DISPlay:FREQuency

This command selects which frequency screen is to be displayed.

Command Syntax

DISPlay:FREQuency <string>
  Where <string> = 'MAXMIN0' | 'MAXMIN1' | 'AVERAGE01'

Example Statements

```
OUTPUT 714;"DISPlay:FREQuency 'MAXMIN1'"
```

Query Syntax

DISPlay:FREQuency?

Return Format

String

DISPlay:OSCilloscope

This command selects which oscilloscope screen is to be displayed.

Command Syntax

DISPlay:OSCilloscope <string>
 Where <string> = 'MAIN' | 'VOLT/TIME' | 'MARKER' | 'TRIGGER1' | 'TRIGGER2'

Example Statements

```
OUTPUT 714;"DISPlay:OSCilloscope 'VOLT/TIME'"
```

Query Syntax

DISPlay:OSCilloscope?

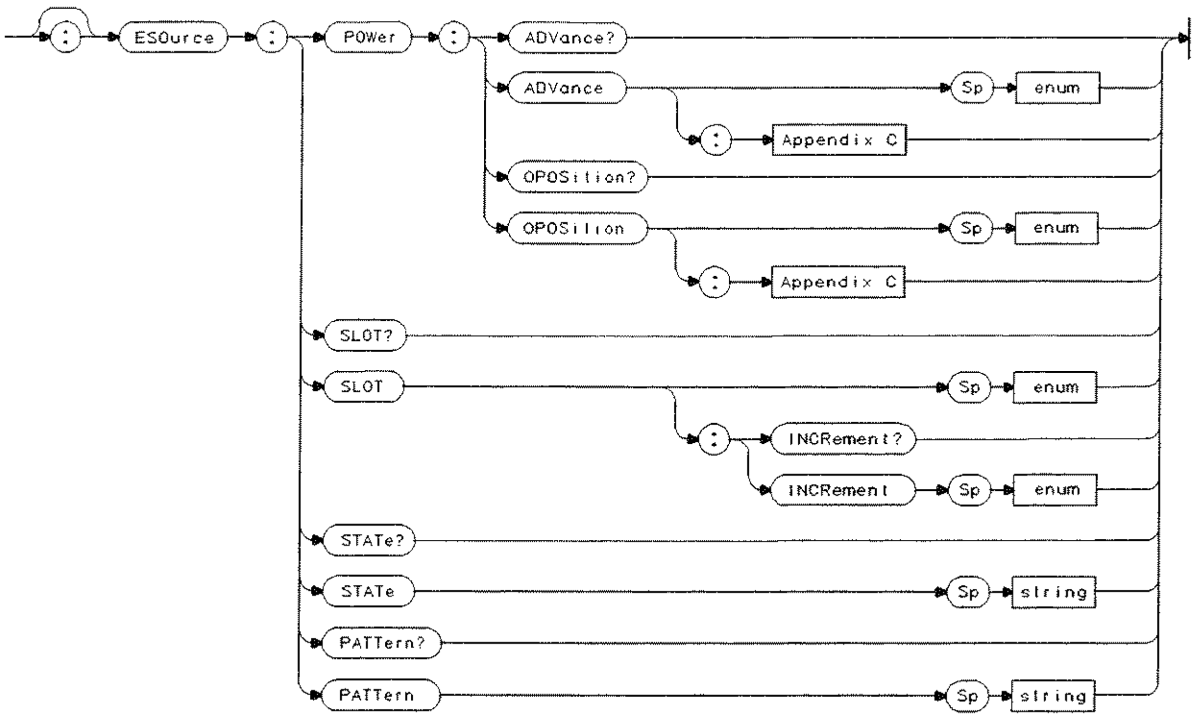
Return Format

String

13

ESOurce Subsystem

This subsystem provides access to external controls and parameters.



ESOurce Syntax Diagram

ESOurce:POWer:ADVance

Positions the leading edge of the trigger signal that goes to the external source.

Command Syntax

ESOurce:POWer:ADVance <power_advance_time_value>

Where <power_advance_time_value> is integer values of bit-periods in the range 0-31, or its equivalent real number in micro-seconds or milli-seconds.

Note The ESOurce:POWer:ADVance command is dependant on the units set by the ESOurce:POWer:ADVance:UNits command.

Example Statements

```
OUTPUT 714;"ESOurce:POWer:ADVance 13"
```

Query Syntax

ESOurce:POWer:ADVance?

Return Format

Real

ESOurce:POWer:OPOSition

Sets the position of the trailing edge of the trigger signal that is supplied to the external source.

Command Syntax

ESOurce:POWer:OPOSition <off_position_time_value>
Where <off_position_time_value> is integer values of bit-periods in the range 416-447, or its equivalent real number in micro-seconds or milli-seconds.

Note The ESOurce:POWer:OPOSition command is dependant on the units set by the ESOurce:POWer:OPOSition:UNits command.

Example Statements

```
OUTPUT 714;"ESOurce:POWer:OPOSition 421"
```

Query Syntax

ESOurce:POWer:OPOSition?

Return Format

Real

ESOurce:SLOT

Sets the slot on which the data will appear.

Command Syntax

ESOurce:SLOT <integer>
Where <integer> is in the range 0 through 23.

Example Statements

```
OUTPUT 714;" ESOurce:SLOT 19"
```

Query Syntax

ESOurce:SLOT?

Return Format

Integer

ESOurce:SLOT:INCRement

Sets the increment value or instructs the increment/decrement to be made.

Command Syntax

ESOurce:SLOT:INCRement <increment_parameter>
Where <increment parameter is UP | DOWN | <increment value>,
and <increment value> is an integer no greater than the difference between the minimum and maximum values of the entry field.

Example Statements

```
OUTPUT 714;"ESOurce:SLOT:INCRement 3"
```

Query Syntax

ESOurce:SLOT:INCRement?

Return Format

Integer

ESOurce:STATe

Enables/disables the trigger output.

Command Syntax

ESOurce:STATe <boolean>
Where <boolean> is 'On' | 'Off' | '1' | '0'

Example Statements

```
OUTPUT 714;"ESOurce:STATe 'On'"
```

Query Syntax

ESOurce:STATe?

Return Format

String

ESOurce:PATTern

Sets the data pattern output to the external source.

Command Syntax

ESOurce:PATTern <string>
Where <string> is 'DM0' | 'DM1' | 'DM2' | 'FACC' | 'FDEV2_FS' .

Example Statements

```
OUTPUT 714;"ESOurce:PATTern 'DM2'"
```

Query Syntax

ESOurce:PATTern?

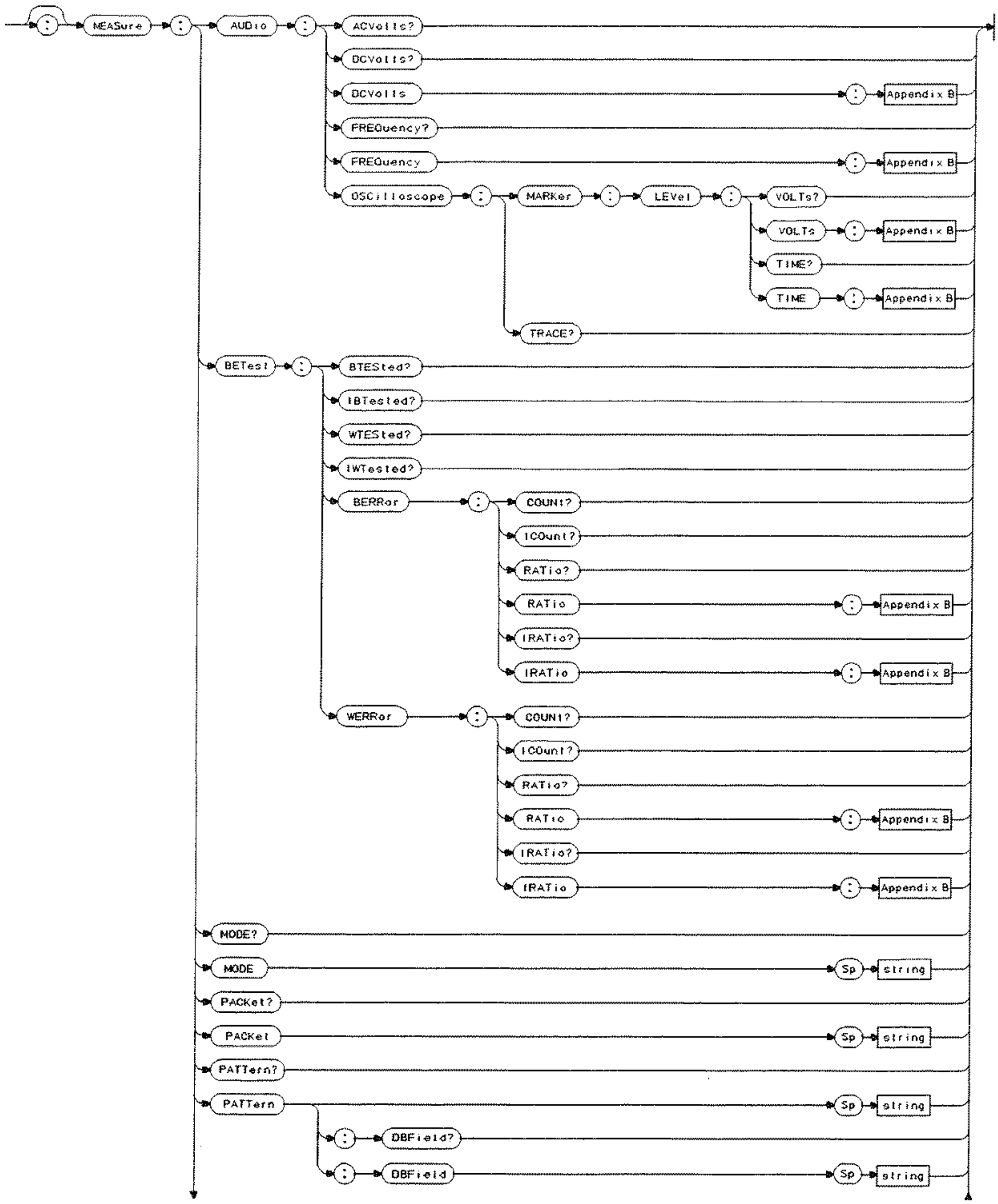
Return Format

String

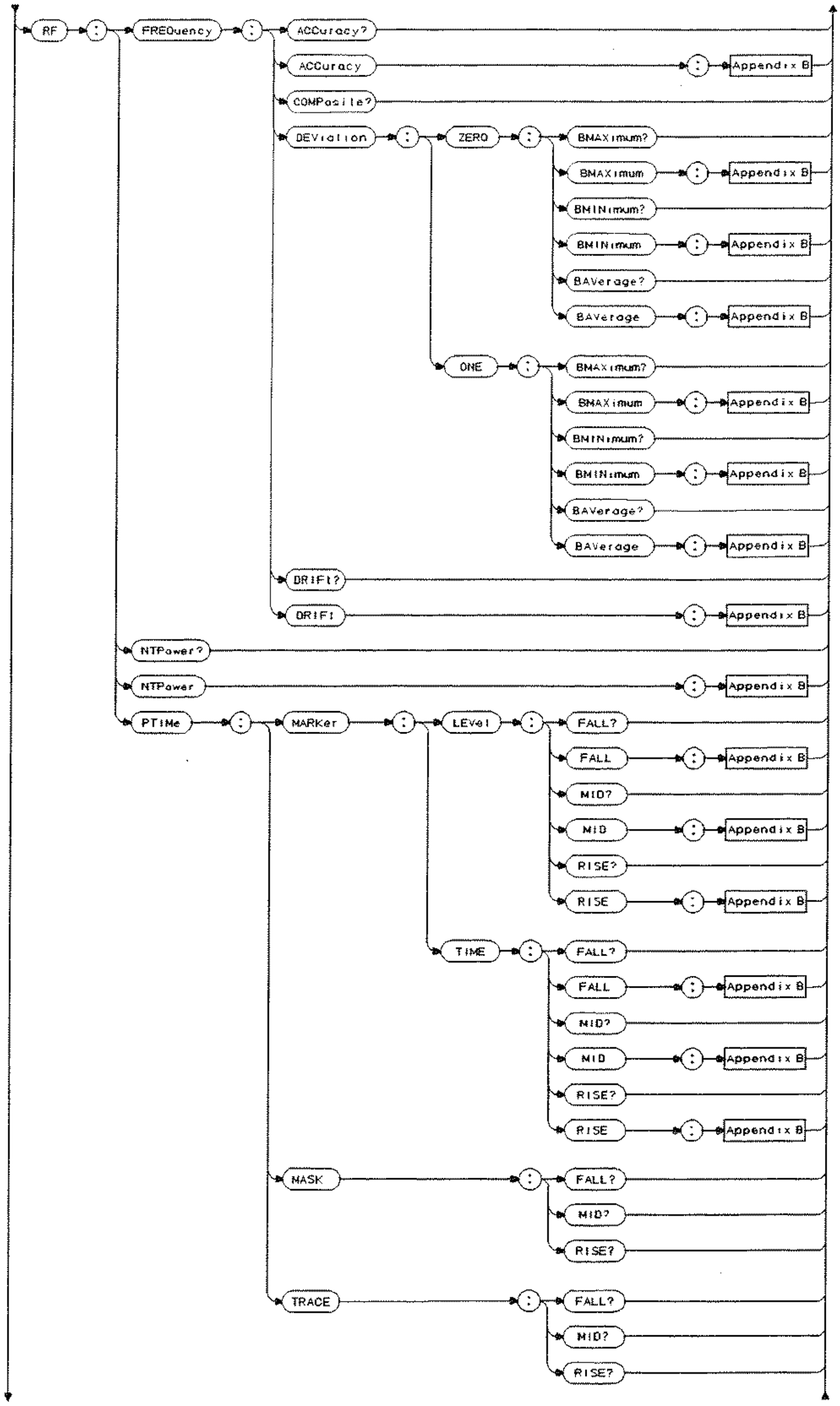
14

MEASure Subsystem

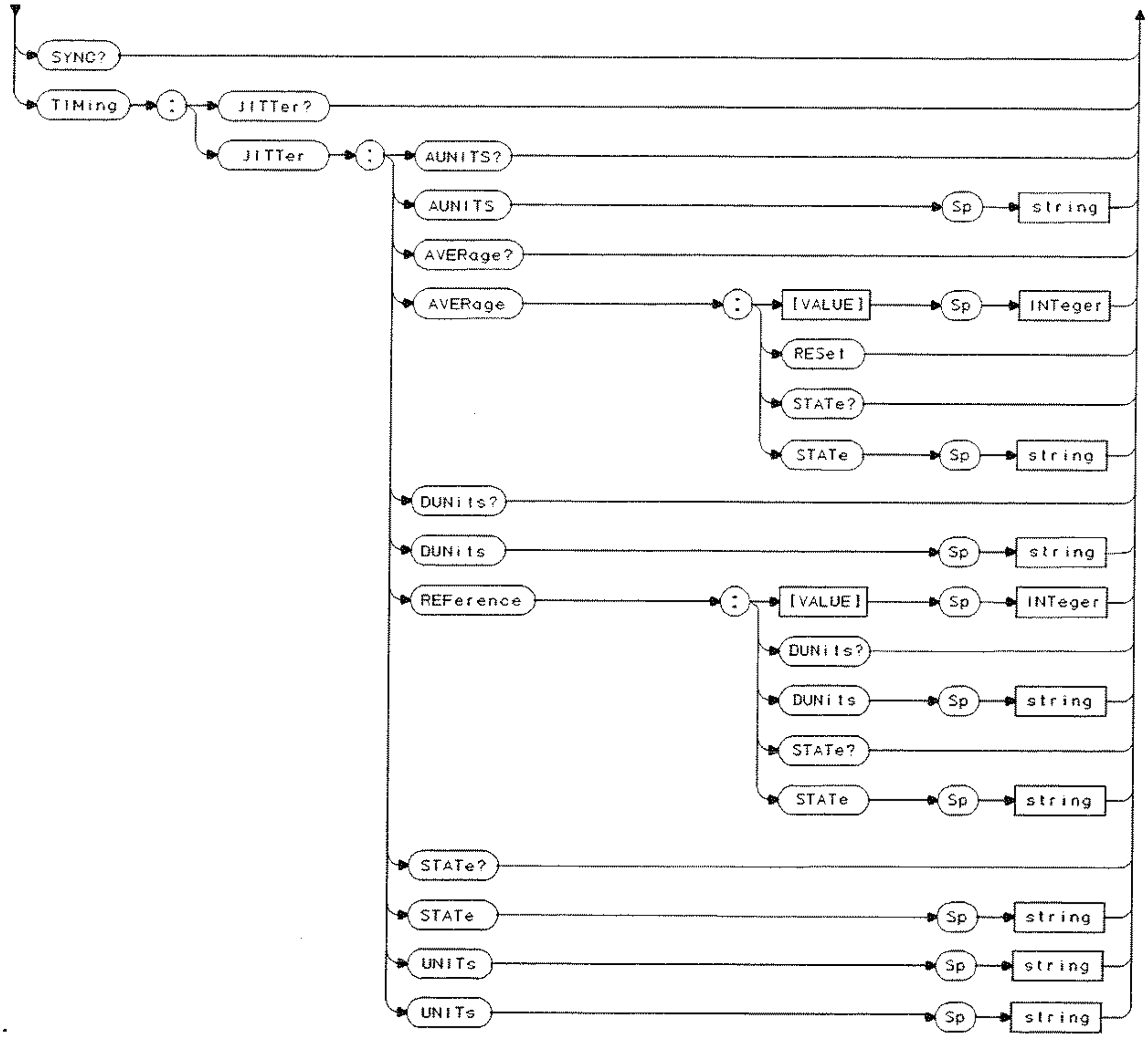
The MEASure subsystem is used to set up the measurement parameters and queries the results.



MEASure Syntax Diagram



MEASure Syntax Diagram



MEASure Syntax Diagram

MEASure:AUDio:ACVolts?

This command returns the measured AC voltage.

Query Syntax

MEASure:AUDio:ACVolts?

Note The AFANalyzer:VOLTage control must be set to 'AC' for this query to return a value.

Return Formats

Real

Note See Appendix B for additional related commands.

MEASure:AUDio:DCVolts?

This command queries the DC voltmeter on the AUDio screen; it measures the DC voltage on the front panel AUDIO IN connector.

Query Syntax

MEASure:AUDio:DCVolts?

Note The AFANalyzer:VOLTage control must be set to 'AC' for this query to return a value.

Return Formats

Real

See Appendix B for additional related commands.

MEASure:AUDio:FREQuency?

This command queries the frequency counter on the AUDio screen; it measures the audio frequency presented to the front panel AUDIO IN connector, or the received audio from the internal CODEC.

Query Syntax

MEASure:AUDio:FREQuency?

Return Format

Real

See Appendix B for additional related commands.

MEASure:AUDio:OSCilloscope:MARKer:LEVel:VOLTs?

This command queries the level in volts of the marker on the oscilloscope screen.

Query Syntax

MEASure:AUDio:OSCilloscope:MARKer:LEVel:VOLTs?

Return Format

Real

See Appendix B for additional related commands.

MEASure:AUDio:OSCilloscope:MARKer:TIME?

This command queries the time measurement associated with the marker on the oscilloscope screen.

Query Syntax

MEASure:AUDio:OSCilloscope:MARKer:TIME?

Return Format

Real

See Appendix B for additional related commands.

MEASure:AUDio:OSCilloscope:TRACE?

This command reads the discrete data points which make up the oscilloscope trace.

Query Syntax

MEASure:AUDio:OSCilloscope:TRACE?

Return Format

417 real numbers corresponding to the values of the trace displayed on the screen.

MEASure:BETest:BERRor:COUNt?

This command queries the number of bit errors on the completed BER measurement.

Query Syntax

MEASure:BETest:BERRor:COUNt?

Return Format

Integer

MEASure:BETest:BERRor:ICOunt?

This command queries the number of bit errors on the intermediate BER measurement.

Query Syntax

MEASure:BETest:BERRor:ICOunt?

Return Format

Integer

MEASure:BETest:BERRor:IRATio?

This command queries the bit error ratio of the intermediate BER measurement.

Query Syntax

MEASure:BETest:BERRor:IRATio?

Return Format

Real

See Appendix B for additional related commands.

MEASure:BETest:BERRor:RATio?

This command queries the bit error ratio of the completed BER measurement.

Query Syntax

MEASure:BETest:BERRor:RATio?

Return Format

Real

See Appendix B for additional related commands.

MEASure:BETest:BTESted?

This command queries the number of bits that have been tested on the completed BER measurement.

Query Syntax

MEASure:BETest:BTESted?

Return Format

Integer

MEASure:BETest:IBTested?

This command queries the number of bits that have been tested on the intermediate BER measurement.

Query Syntax

MEASure:BETest:IBTested?

Return Format

Integer

MEASure:BETest:IWTested?

This command queries the number of words tested on the intermediate BER or WER measurement.

Query Syntax

MEASure:BETest:IWTested?

Return Format

Integer

MEASure:BETest:WERRor:COUNt?

This command queries the number of word/frame errors on the completed WER measurement.

Query Syntax

MEASure:BETest:WERRor:COUNt?

Return Format

Integer

MEASure:BETest:WERRor:ICOunt?

This command queries the number of word/frame errors on the intermediate WER measurement.

Query Syntax

MEASure:BETest:WERRor:ICOunt?

Return Format

Integer

MEASure:BETest:WERRor:IRATio?

This command queries the word/frame error ratio of the intermediate WER measurement.

Query Syntax

MEASure:BETest:WERRor:IRATio?

Return Format

Real

See Appendix B for additional related commands.

MEASure:BETest:WERRor:RATio?

This command queries the word/frame error ratio of the completed WER measurement.

Query Syntax

MEASure:BETest:WERRor:RATio?

Return Format

Real

See Appendix B for additional related commands.

MEASure:BETest:WTESted?

This command queries the number of words tested on the completed BER or WER measurement.

Query Syntax

MEASure:BETest:WTESted?

Return Format

Integer

MEASure:MODE

This command sets the HP 8923 for normal (bursted) or CW measurements.

Command Syntax

MEASure:MODE <string>
 Where <string> = 'Normal' | 'CW'

Example Statements

```
OUTPUT 714;"MEASure:MODE 'Normal'"
```

Query Syntax

MEASure:MODE?

Return Format

String

MEASure:PACKet

This command sets the size of the DECT packet for measurement.

Command Syntax

MEASure:PACKet <string>
  Where <string> = 'P00' | 'P32'

Example Statements

```
OUTPUT 714;"MEASure:PACKet 'P32'"
```

Query Syntax

MEASure:PACKet?

Return Format

String

MEASure:PATTern

This command sets the measurement pattern for the HP 8923.

Command Syntax

MEASure:PATTern <string>
Where <string> = 'DM0' | 'DM1' | 'DM2' | 'FACC' | 'FDEV1_FS' | 'FDEV2_FS' | 'USER_DEF'

Example Statements

```
OUTPUT 714;"MEASure:PATTern 'FACC'"
```

Query Syntax

MEASure:PATTern?

Return Format

String

For a description of the patterns used in making measurements, refer to the *HP 8923B DECT Test Set User's Manual.*

MEASure:PATTern:DBField

This command sets the B-field of the HP 8923's user definable packet.

Command Syntax

MEASure:PATTern:DBField <string>
Where <string> is a list of eighty hexidecimal characters which correspond to the 320 bits of the B-Field.

Example Statements

```
OUTPUT 714;"MEASure:PATTern 'USER_DEF'"
```

Query Syntax

MEASure:PATTern:DBField?

Return Format

String

For a description of valid test patterns for use with the defined B-Field, refer to the *HP 8923B DECT Test Set User's Manual.*

MEASure:RF:FREQuency:ACCuracy?

This query returns the value of the frequency accuracy measurement.

Query Syntax

MEASure:RF:FREQuency:ACCuracy?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:COMPosite?

This query returns the frequency accuracy and all of the frequency deviation measurements. They are returned in the order:

- Frequency accuracy,
- Frequency deviation maximum for a zero,
- Frequency deviation minimum for a zero,
- Frequency deviation average for a zero,
- Frequency deviation maximum for a one,
- Frequency deviation minimum for a one,
- Frequency deviation average for a one.

Query Syntax

MEASure:RF:FREQuency:COMPosite?

Return Format

Real,real,real,real,real,real,real.

MEASure:RF:FREQuency:DEViation:ONE:BAVerage?

This query returns the average frequency deviation measurement of a modulated one(1) across a single burst.

Query Syntax

MEASure:RF:FREQuency:DEViation:ONE:BAVerage?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:DEViation:ONE:BMAXimum?

This query returns the maximum frequency deviation measurement of a modulated one(1) across a single burst.

Query Syntax

MEASure:RF:FREQuency:DEViation:ONE:BMAXimum?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:DEViation:ONE:BMINimum?

This query returns the minimum frequency deviation measurement of a modulated one(1) across a single burst.

Query Syntax

MEASure:RF:FREQuency:DEViation:ONE:BMINimum?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:DEViation:ZERO:BAVerage?

This query returns the average frequency deviation measurement of a modulated zero(0) across a single burst.

Query Syntax

MEASure:RF:FREQuency:DEViation:ZERO:BAVerage?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:DEViation:ZERO:BMAXimum?

This query returns the maximum frequency deviation measurement of a modulated zero(0) across a single burst.

Query Syntax

MEASure:RF:FREQuency:DEViation:ZERO:BMAXimum?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:DEViation:ZERO:BMINimum?

This query returns the minimum frequency deviation measurement of a modulated zero(0) across a single burst.

Query Syntax

MEASure:RF:FREQuency:DEViation:ZERO:BMINimum?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:FREQuency:DRIFt?

This query returns the frequency drift across a single burst.

Query Syntax

MEASure:RF:FREQuency:DRIFt?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:NTPower?

This query returns the value of the Normal Transmitted Power measurement (NTP).

Query Syntax

MEASure:RF:NTPower?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MARKer:LEVel:FALL?

This query returns the level of the marker on the power time falling edge screen.

Query Syntax

MEASure:RF:PTIMe:MARKer:LEVel:FALL?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MARKer:LEVel:MID?

This query returns the level of the marker on the power time middle section screen.

Query Syntax

MEASure:RF:PTIMe:MARKer:LEVel:MID?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MARKer:LEVel:RISE?

This query returns the level of the marker on the power time rising edge screen.

Query Syntax

MEASure:RF:PTIMe:MARKer:LEVel:RISE?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MARKer:TIME:FALL?

This query returns the timing of the marker on the power time falling edge screen.

Query Syntax

MEASure:RF:PTIMe:MARKer:TIME:FALL?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MARKer:TIME:MID?

This query returns the timing of the marker on the power time middle section screen.

Query Syntax

MEASure:RF:PTIMe:MARKer:TIME:MID?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MARKer:TIME:RISE?

This query returns the timing of the marker on the power time rising edge screen.

Query Syntax

MEASure:RF:PTIMe:MARKer:TIME:RISE?

Return Format

Real

See Appendix B for additional related commands.

MEASure:RF:PTIMe:MASK:FALL?

This query returns whether the DECT signal falls within the power/time template for the fall section of the burst.

Query Syntax

MEASure:RF:PTIMe:MASK:FALL?

Return Format

String - "PASS" or "FAIL"

MEASure:RF:PTIMe:MASK:MID?

This query returns whether the DECT signal falls within the power/time template for the middle section of the burst.

Query Syntax

MEASure:RF:PTIMe:MASK:MID?

Return Format

String - "PASS" or "FAIL"

MEASure:RF:PTIMe:MASK:RISE?

This query returns whether the DECT signal falls within the power mask for the rise section of the burst.

Query Syntax

MEASure:RF:PTIMe:MASK:RISE?

Return Format

String - "PASS" or "FAIL"

MEASure:RF:PTIMe:TRACe:FALL?

This query returns the trace data points for the falling edge measurements.

Query Syntax

MEASure:RF:PTIMe:TRACe:FALL?

Return Format

417 data points in real numbers

MEASure:RF:PTIMe:TRACe:MID?

This query returns the trace data points for the mid section measurements.

Query Syntax

MEASure:RF:PTIMe:TRACe:MID?

Return Format

417 data points in real numbers

MEASure:RF:PTIMe:TRACe:RISE?

This query returns the trace data points for the rising edge measurements.

Query Syntax

MEASure:RF:PTIMe:TRACe:RISE?

Return Format

417 data points in real numbers

MEASure:RF:TIMing:JITTer?

This query returns the timing jitter value in fundamental units of seconds.

Query Syntax

MEASure:RF:TIMing:JITTer? <real number>

Return Format

Real

See Appendix B for additional related commands.

MEASure:SYNC?

This query returns the measurement synchronisation display.

Query Syntax

```
OUTPUT 714;"MEASure:SYNC?"
```

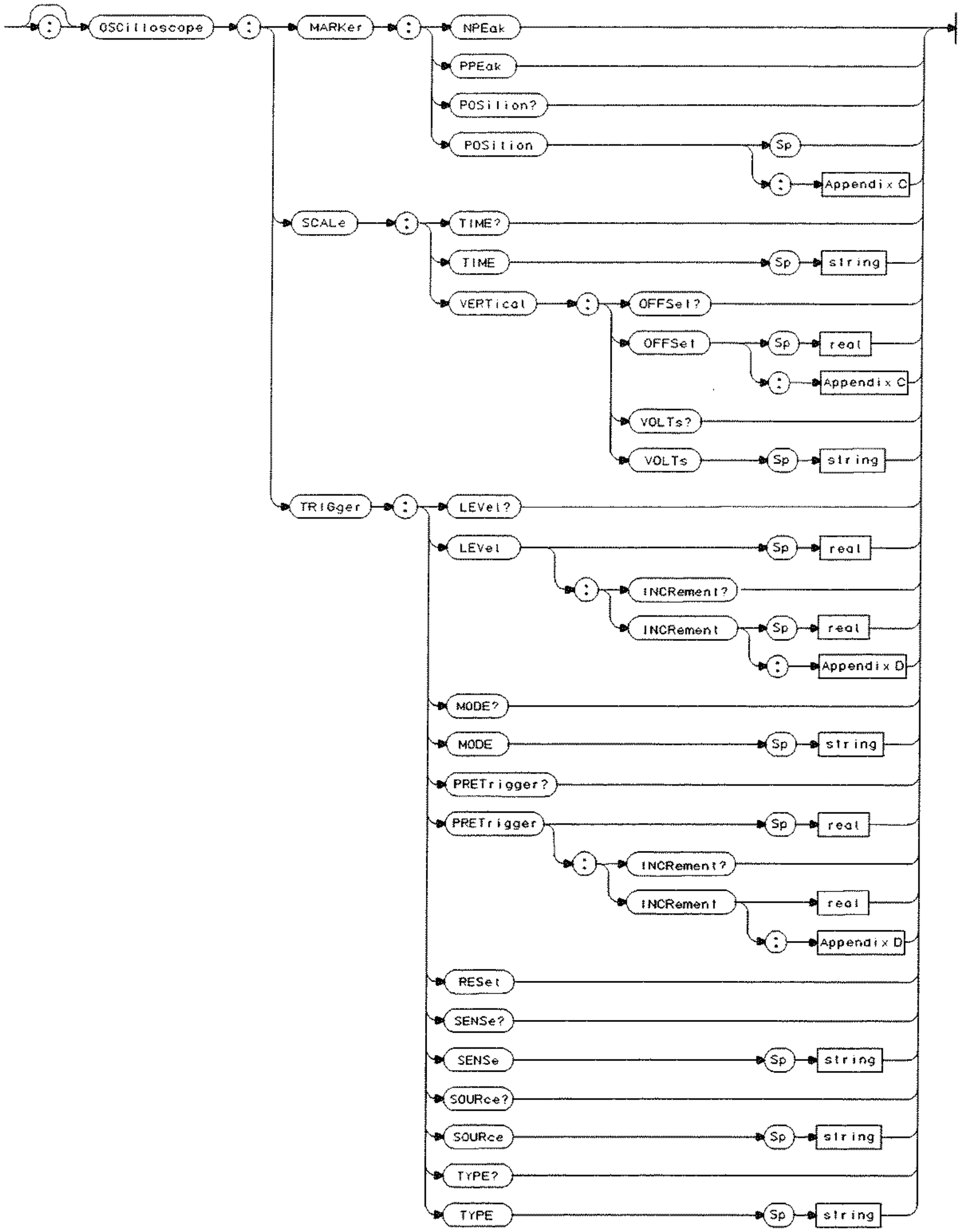
Return Format

String

15

OSCilloscope Subsystem

This subsystem controls the operation of the oscilloscope.



OSCilloscope Syntax Diagram

OSCilloscope:MARKer:NPEak

This command moves the marker on the oscilloscope to the negative peak of the on screen trace.

Command Syntax

OSCilloscope:MARKer:NPEak

Example Statements

```
OUTPUT 714;"OSCilloscope:MARKer:NPEak"
```

OSCilloscope:MARKer:PPEak

This command moves the marker on the oscilloscope to the positive peak of the on screen trace.

Command Syntax

OSCilloscope:MARKer:PPEak

Example Statements

```
OUTPUT 714;"OSCilloscope:MARKer:PPEak"
```

OSCilloscope:MARKer:POSition

This command sets the position of the marker on the oscilloscope trace.

Command Syntax

OSCilloscope:MARKer:POSition <increment_parameter>
or
OSCilloscope:MARKer:POSition <value> [<units_parameters> - (optional)]
Where <increment_parameter> = UP or DOWN
Where <value> = real number
Where <measurement_parameter> = DIV

Example Statements

```
OUTPUT 714;"OSCilloscope:MARKer:POSition UP"
OUTPUT 714;"OSCilloscope:MARKer:POSition 3.2 DIV"
```

Query Syntax

OSCilloscope:MARKer:POSition?

Return Format

Real

See Appendix C for additional related commands.

OSCilloscope:SCALe:TIME

This command sets the oscilloscope timebase.

Command Syntax

OSCilloscope:SCALe:TIME <string>
Where <string> = '1 US' | '2 US' | '5 US' | '10 US' | '20 US' |
'50 US' | '100 US' | '200 US' | '500 US' | '1 MS' | '2 MS' | '5 MS' |
'10 MS' | '20 MS' | '50 MS' | '100 MS' | '200 MS'

Example Statements

```
OUTPUT 714;"OSCilloscope:SCALe:TIME '500 US'"
```

Query Syntax

OSCilloscope:SCALe:TIME?

Return Format

String

OSCilloscope:SCALe:VERTical:OFFSet

This command sets the amplitude offset for the oscilloscope trace.

Command Syntax

OSCilloscope:SCALe:VERTical:OFFSet <value> [<measurement_parameters>] - optional
  Where <value> = real number
  Where <measurement_parameter> = DIV

Example Statements

```
OUTPUT 714;"OSCilloscope:SCALe:VERTical:OFFSet 3.2 DIV"
```

Query Syntax

OSCilloscope:SCALe:VERTical:OFFSet?

Return Format

Real

See Appendix C for additional related commands.

OSCilloscope:SCALe:VERTical:VOLTs

This command sets the amplitude scale of the oscilliscope.

Command Syntax

OSCilloscope:SCALe:VERTical:VOLTs <string>
Where <string> = '1 MV' | '2 MV' | '5 MV' | '10 MV' | '20 MV' |
'50 MV' | '100 MV' | '200 MV' | '500 MV' | '1 V' |
'2 V' | '5 V' | '20 V'.

Example Statements

```
OUTPUT 714;"OSCilloscope:SCALe:VERTical:VOLTs '500 MV'"
```

Query Syntax

OSCilloscope:SCALe:VERTical:VOLTs?

Return Format

String

OSCilloscope:TRIGger:LEVel

This command sets the trigger level of the oscilloscope.

Command Syntax>

OSCilloscope:TRIGger:LEVel <value> [<measurement_parameters>] - optional
Where <value> = real number
Where <measurement_parameter> = DIV

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:LEVel 1.2 DIV"
```

Query Syntax

OSCilloscope:TRIGger:LEVel?

Return Format

Real

OSCilloscope:TRIGger:LEVel:INCRement

This command controls the increment of the oscilloscope's trigger level input. This can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Command Syntax

OSCilloscope:TRIGger:LEVel:INCRement <increment_parameters> | <value>
Where <increment_parameters> = UP | DOWN
Where <value> = real number

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:LEVel:INCRement UP"
```

Query Syntax

OSCilloscope:TRIGger:LEVel:INCRement?

Return Format

Real

See Appendix D for additional related commands.

OSCilloscope:TRIGger:MODE

This command sets the oscilloscope to continuous or single shot triggering.

Command Syntax

OSCilloscope:TRIGger:MODE <string>
  Where <string> = 'Cont' | 'Sngl'

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:MODE 'Cont'"
```

Query Syntax

OSCilloscope:TRIGger:MODE?

Return Format

String

OSCilloscope:TRIGger:PRETrigger

This command sets the oscilloscope pretrigger value.

Command Syntax

OSCilloscope:TRIGger:PRETrigger <value>
Where <value> = DIV

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:PRETrigger 3.2 DIV"
```

Query Syntax

OSCilloscope:TRIGger:PRETrigger?

Return Format

Real

OSCilloscope:TRIGger:PRETrigger:INCRement

This command controls the increment of the oscilloscope's pretrigger level input. This can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Command Syntax

OSCilloscope:TRIGger:PRETrigger:INCRement <increment_parameter> | <value>
Where <increment_parameter> = UP | DOWN
Where <value> = real number

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:PRETrigger:INCRement 3"
```

Query Syntax

OSCilloscope:TRIGger:PRETrigger:INCRement?

Return Format

Real

See Appendix D for additional related commands.

OSCilloscope:TRIGger:RESet

This command retriggers an oscilloscope measurement when on single trigger mode.

Command Syntax

OSCilloscope:TRIGger:RESet

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:RESet"
```

OSCilloscope:TRIGger:SENSe

This command sets the triggering edge for making oscilloscope measurements.

Command Syntax

OSCilloscope:TRIGger:SENSe <string>
  Where <string> = 'Pos' | 'Neg'

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:SENSe 'Pos'"
```

Query Syntax

OSCilloscope:TRIGger:SENSe?

Return Format

String

OSCilloscope:TRIGger:SOURce

This command sets the oscilloscope trigger source to internal or external.

Command Syntax

OSCilloscope:TRIGger:SOURce <string>
  Where <string> = 'Ext' | 'Int'

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:SOURce 'Int'"
```

Query Syntax

OSCilloscope:TRIGger:SOURce?

Return Format

String

OSCilloscope:TRIGger:TYPE

This command sets the oscilloscope to automatic level triggering or manual level triggering using the trigger level control.

Command Syntax

OSCilloscope:TRIGger:TYPE <string>
Where <string> = 'Norm' | 'Auto'

Example Statements

```
OUTPUT 714;"OSCilloscope:TRIGger:TYPE 'Norm'"
```

Query Syntax

OSCilloscope:TRIGger:TYPE?

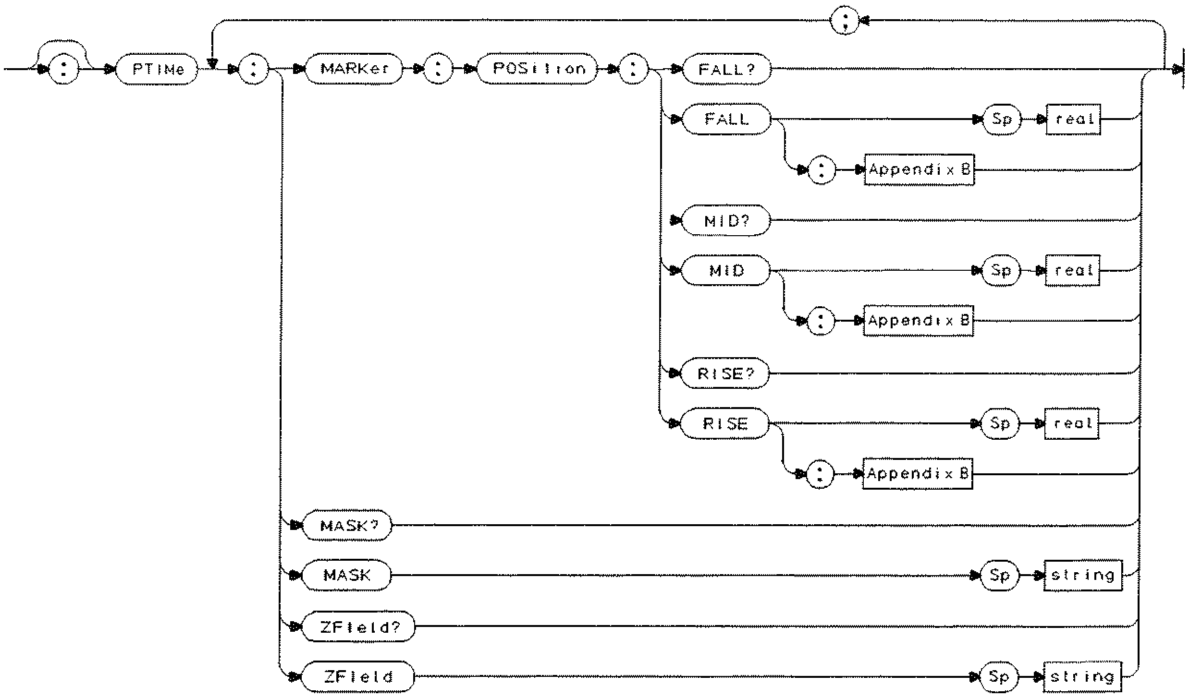
Return Format

String

16

PTIMe Subsystem

This subsystem controls of the power-time configuration and measurement on the HP 8923B.



PTIMe Syntax Diagram

PTIMe:MARKer:POSition:FALL

This command sets the position of the marker on the power time fall screen in screen divisions.

Command Syntax

PTIMe:MARKer:POSition:FALL <real number>
Where <real number> = 0.75 through 7.25

Example Statements

```
OUTPUT 714;"PTIMe:MARKer:POSition:FALL 4.25"
```

Query Syntax

PTIMe:MARKer:POSition:FALL?

Return Format

Real

See Appendix C for additional related commands.

PTIMe:MARKer:POSition:MID

This command sets the position of the marker on the power time middle screen in screen divisions.

Command Syntax

PTIMe:MARKer:POSition:MID <value>
  Where <value> = 0.4 through 16

Example Statements

```
OUTPUT 714;"PTIMe:MARKer:POSition:MID 6.5"
```

Query Syntax

PTIMe:MARKer:POSition:MID?

Return Format

Real

See Appendix C for additional related commands.

PTIMe:MARKer:POSition:RISE

This command sets the position of the marker on the power time middle screen in screen divisions.

Command Syntax

PTIMe:MARKer:POSition:RISE <value>
  Where <value> = 0.75 through 7.25

Example Statements

```
OUTPUT 714;"PTIMe:MARKer:POSition:RISE 1.5"
```

Query Syntax

PTIMe:MARKer:POSition:RISE?

Return Format

Real

See Appendix C for additional related commands.

PTIMe:MASK

This command activates/deactivates the power time on all of the power versus time measurement screens.

Command Syntax

PTIMe:MASK <command_parameter>
Where <command_parameter> = 'On' | 'Off'

Example Statements

```
OUTPUT 714;"PTIMe:MASK 'On'"
```

Query Syntax

PTIMe:MASK?

Return Format

String

PTIMe:ZFIeld

This command allows access to control the Z Field.

Command Syntax

PTIMe:ZFIeld <string>
  Where <string> = 'Yes' | 'No'

Example Statements

```
OUTPUT 714;"PTIMe:ZFIeld 'Yes'"
```

Query Syntax

PTIMe:ZFIeld?

Return Format

String

17

REGister Subsystem

The Register subsystem controls the instrument state memory.

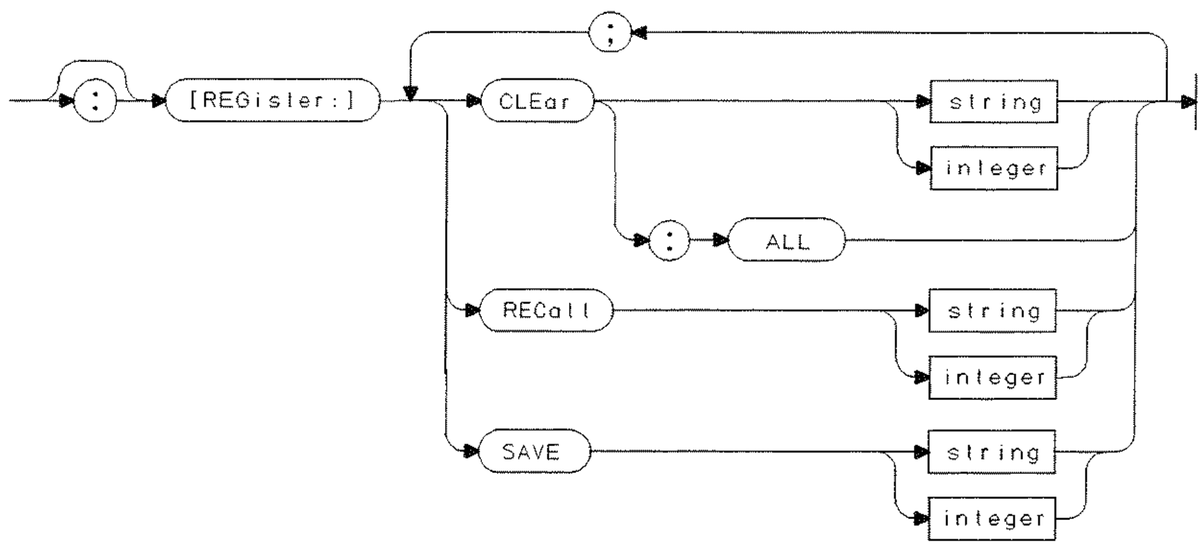


Figure 17-1. REGister Syntax Diagram

[REGister:]CLEar

This command clears an instrument state register.

Command Syntax

CLEar <integer> or <string>
or
REGister:CLEar <integer> or <string>
Where <integer> and <string> are customer definable identifiers.

Example Statements

```
OUTPUT 714;"REGister:CLEar 53"
```
or
```
OUTPUT 714;"CLEar 53"
```

[REGister:]CLEar:ALL

This command clears all the instrument state registers.

Command Syntax

CLEar:ALL
or
REGister:CLEar:ALL

Example Statements

```
OUTPUT 714;"REGister:CLEar:ALL"
```
or
```
OUTPUT 714;"CLEar:ALL"
```

[REGister:]RECall

This command recalls an instrument state from the memory. An instrument state stored using the common command *SAV may be recalled using *RCL or [REGister:]RECall. The *SAV uses an integer which can be recalled using the same integer as the identifier. Using [REGister:]SAVE allows you to use alphanumeric strings instead of integers. [REGister:]RECall can use alphanumeric strings or integers.

Command Syntax

RECall <integer> or <string>
or
REGister:RECall <integer> or <string>
Where <integer> and <string> are customer definable identifiers.

Example Statements

```
OUTPUT 714;"REGister:RECall 13"
```
or
```
OUTPUT 714;"RECall 13"
```

[REGister:]SAVE

This command save an instrument state to the memory.

The *RCL command may be used to return the instrument to the state at which the instrument was saved using [REGister:]SAVE <integer>. The *RCL must use the same integer to return to this state. If [REGister:]SAVE used a string to store an instrument state, only [REGister:]RECall can be used to restore the instrument to its initial state. The total number of registers which can be saved is limited by the number of settings which differ from their preset condition and the memory available.

Command Syntax

SAVE <integer> or <string>
or
REGister:SAVE <integer> or <string>
Where <integer> and <string> are customer definable identifiers.

Example Statements

```
OUTPUT 714;"REGister:SAVE 29"
or
OUTPUT 714;"SAVE 29"
```

18

RFANalyzer Subsystem

The RFANalyzer subsystem controls the input frequency and amplitude settings of the HP 8923B.

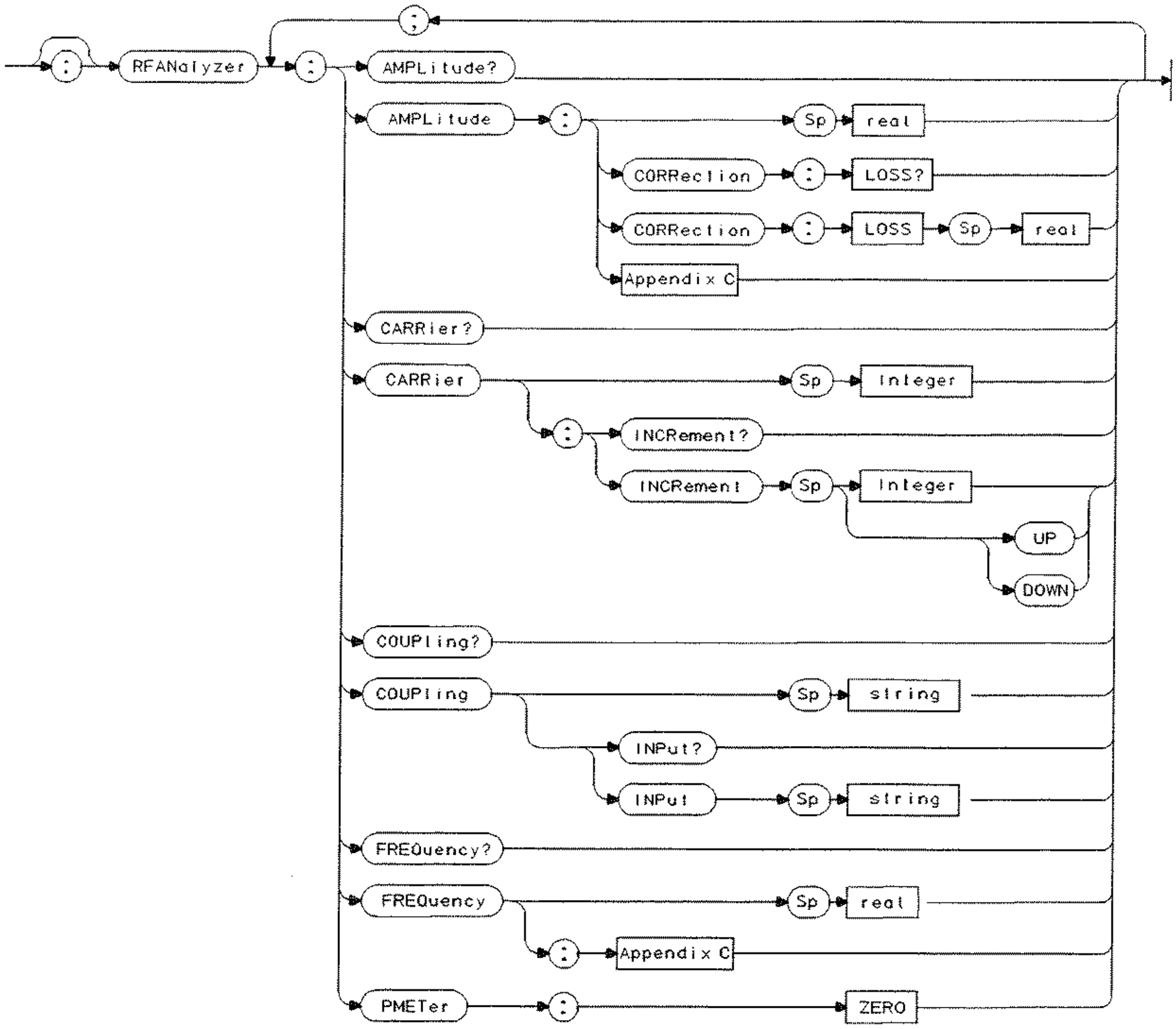


Figure 18-1. RFANalyzer Syntax Diagram

RFANalyzer:AMPLitude

This command sets the input amplitude expected from the EUT at the RF In/Out connector of the HP 8923B.

Command Syntax

RFANalyzer:AMPLitude <value> [<amplitude_parameters> (optional)]
Where <value> = real number
Where <amplitude parameters> = 'DBM' | 'DBMW' | 'DBUV' | 'V' | 'W'.

Example Statements

```
OUTPUT 714;"RFANalyzer:AMPLitude 3.2"
OUTPUT 714;"RFANalyzer:AMPLitude 24 DBM"
```

Query Syntax

RFANalyzer:AMPLitude?

Return Format

Real

See Appendix C for additional related commands.

RFANalyzer:AMPLitude:CORRection:LOSS

This command allows you to set the known power out of the UUT and the known loss in the cabling/coupling, rather than having to add/subtract the two and then alter the instrument settings.

Command Syntax

RFANalyzer:AMPLitude:CORRection:LOSS <real number>
Where <real number> is in the range 0.0 to 40.0.

Example Statements

```
OUTPUT 714;"RFANalyzer:AMPLitude:CORRection:LOSS 3.142"
```

Query Syntax

RFANalyzer:AMPLitude:CORRection:LOSS?

Return Format

Real

See Appendix C for additional related commands.

RFANalyzer:CARRier

This command sets the DECT RF carrier number to which the HP 8923B is tuned for making measurements.

Note This command only has effect when the RFANalyzer:COUPling is set to 'Manual' *and* the RFANalyzer:COUPling:INPut is set to 'Carrier No'.

Command Syntax

RFANalyzer:CARRier <value>
Where <value> = 0 through 9

Example Statements

```
OUTPUT 714;"RFANalyzer:CARRier 3"
```

Query Syntax

RFANalyzer:CARRier?

Return Format

Integer

RFANalyzer:CARRier:INCRement

This command controls the increment of the RF analyzer's carrier frequency. This can be used to:

1. Set the increment magnitude, using a numeric parameter.
2. Apply the increment, using either the UP or DOWN parameter.

Note This command only has effect when the RFANalyzer:COUPling is set to 'Manual' *and* the RFANalyzer:COUPling:INPut is set to 'Carrier No'.

Command Syntax

RFANalyzer:CARRier:INCRement <value> | <increment_parameter>
Where <value> = integer
Where <increment_parameter> = UP | DOWN

Example Statements

```
OUTPUT 714;"RFANalyzer:CARRier:INCRement 3"
OUTPUT 714;"RFANalyzer:CARRier:INCRement DOWN"
```

Query Syntax

RFANalyzer:CARRier:INCRement?

Return Format

Integer

RFANalyzer:COUPling

This command sets the input frequency of the HP 8923B to be coupled to the traffic bearer, the dummy bearer or set independently.

Command Syntax

RFANalyzer:COUPling <string>
  Where <string> = 'Manual' | 'Traffic' | 'Dummy'

Example Statements

```
OUTPUT 714;"RFANalyzer:COUPling 'Traffic'"
```

Query Syntax

RFANalyzer:COUPling?

Return Format

String

RFANalyzer:COUPling:INPut

This command sets the form of frequency input of the HP 8923B. This can either be in terms of a frequency value or a DECT RF carrier number.

Note This command only has effect when RFANalyzer:COUPling is set to 'Manual'.

Command Syntax

RFANalyzer:COUPling:INPut <string>
Where <string> = 'Freq' | 'Carrier No'

Example Statements

```
OUTPUT 714;"RFANalyzer:COUPling:INPut 'Freq'"
```

Query Syntax

RFANalyzer:COUPling:INPut?

Return Format

String

RFANalyzer:FREQuency

This command sets the RF frequency to which the HP 8923B is tuned.

Note This command only has effect when RFANalyzer:COUPling is set to 'Manual' *and* RFANalyzer:COUPling:INPut is set to 'Freq'

Command Syntax

RFANalyzer:FREQuency <value> [<units_parameter> (optional)]
Where <value> = real number (final value should read between 1880 MHz and 1990 MHz).
Where <units_parameter> = 'HZ' | 'KHZ' | 'MHZ' | 'GHZ'.

Example Statements

```
OUTPUT 714;"RFANalyzer:FREQuency 1897.344MHZ"
```

Query Syntax

RFANalyzer:FREQuency?

Return Format

Real

See Appendix C for additional related commands.

RFANalyzer:PMETer:ZERO

This command zero's the power meter in the presence of no input signal. All power should be removed from the input connector prior to sending this command.

This is the order of the actions:

- Remove the input power.
- Set the RFAN:AMPL to its lowest value.
- Execute PMET:ZERO
- Replace the input power.
- Reset the RFAN:AMPL to its expected value.

Command Syntax

RFANalyzer:PMETer:ZERO

Example Statements

OUTPUT 714;"RFANalyzer:PMETer:ZERO"

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RFGenerator Subsystem

The RFGenerator subsystem controls the output amplitude of the HP 8923B.

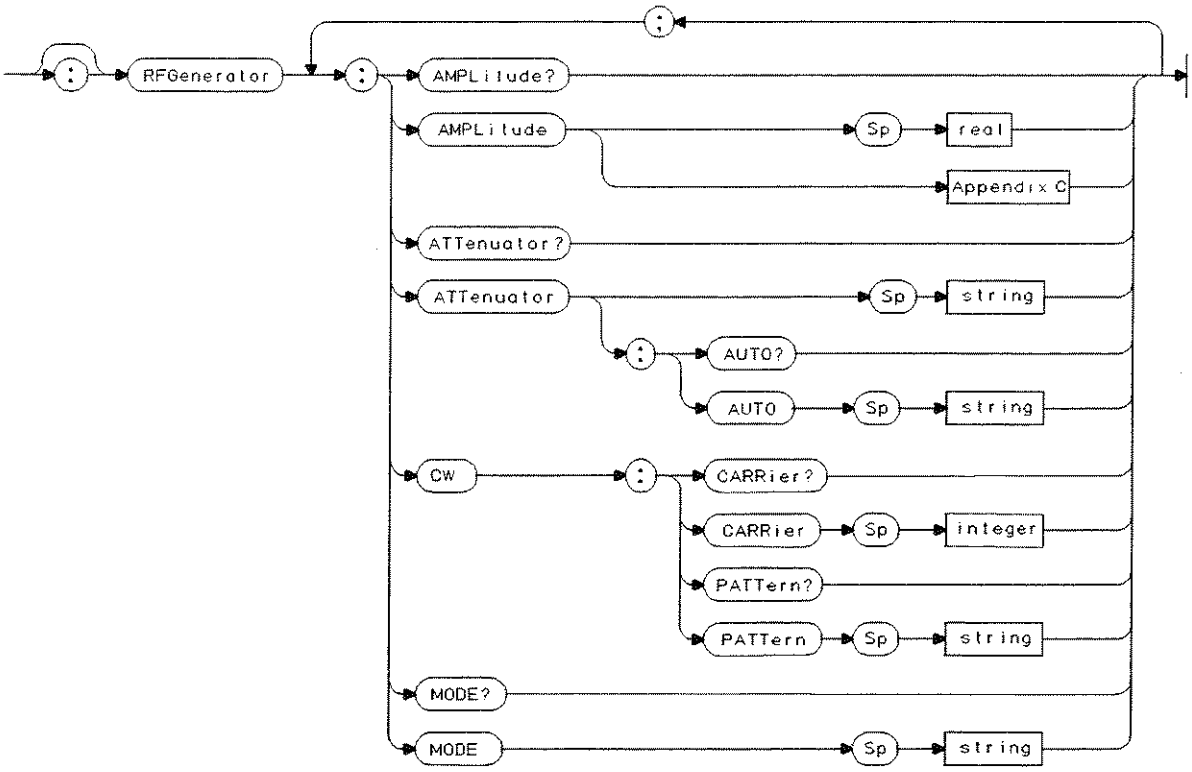

Figure 19-1. RFGenerator Syntax Diagram

RFGenerator:AMPLitude

This command sets the output amplitude of the HP 8923B.

Command Syntax

RFGenerator:AMPLitude <value> [<units_parameter> (optional)]
Where <value> = real number
Where <units_parameter> = 'DBM' | 'DBMW' | 'DBUV' | 'MV' | 'MW' | 'UV' | 'V' | 'W'.

Example Statements

```
OUTPUT 714;"RFGenerator:AMPLitude -83 DBM"
```

Query Syntax

RFGenerator:AMPLitude?

Return Format

Real

See Appendix C for additional related commands.

RFGenerator:ATTenuator

This command sets the output attenuator of the HP 8923B.

Note This command will force the RFGenerator:ATTenuator:AUTO to 'OFF' and will restrict the range of RFGenerator:AMPLitude.

Command Syntax

RFGenerator:ATTenuator <string>
Where <string> = '100 dB' | '90 dB' | '80 dB' | '70 dB' | '60 dB' | '50 dB' | '40 dB' | '30 dB' | '20 dB' | '10 dB' | '0 dB'.

Example Statements

```
OUTPUT 714;"RFGenerator:ATTenuator '80 dB'"
```

Query Syntax

RFGenerator:ATTenuator?

Return Format

String

RFGenerator:ATTenuator:AUTO

This command sets the output attenuator of the HP 8923B to automatic or manual selection. When set to "Off" the output level range is restricted and attenuator is selected manually. When set to "On" the instrument will set the appropriate attenuator for the output level.

Command Syntax

RFGenerator:ATTenuator:AUTO <string>
 Where <string> = 'On' | 'Off'

Example Statements

```
OUTPUT 714;"RFGenerator:ATTenuator:AUTO 'Off'"
```

Query Syntax

RFGenerator:ATTenuator:AUTO?

Return Format

String

RFGenerator:CW:CARRier

This command sets the output frequency in terms of DECT RF carrier number.

Note This command only has effect when RFGenerator:MODE is set to 'CW'

Command Syntax

RFGenerator:CW:CARRier <value>
Where <value> = 0 through 9

Example Statements

```
OUTPUT 714;"RFGenerator:CW:CARRier 3 "
```

Query Syntax

RFGenerator:CW:CARRier?

Return Format

Integer

RFGenerator:CW:PATTern

This command sets the pattern which is modulated onto the CW carrier.

Note This command only has effect when RFGenerator:MODE is set to 'CW'

Command Syntax

RFGenerator:CW:PATTern <string>
Where <string> = '0000 ... 0000' | '1111 ... 1111' | '0101 ... 0101' | '00001111 ... '.

Example Statements

```
OUTPUT 714;"RFGenerator:CW:PATTern '1111 ... 1111'"
```

Query Syntax

RFGenerator:CW:PATTern?

Return Format

String

RFGenerator:MODE

This command sets the HP 8923B output to be a normal DECT pulse modulated signal or a modulated CW signal.

Command Syntax

RFGenerator:MODE <string>
Where <string> = 'Normal' | 'CW'

Example Statements

```
OUTPUT 714;"RFGenerator:MODE 'CW'"
```

Query Syntax

RFGenerator:MODE?

Return Format

String

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STATus Subsystem

The STATus subsystem provides access to information about the instrument's status, transient events, and errors.

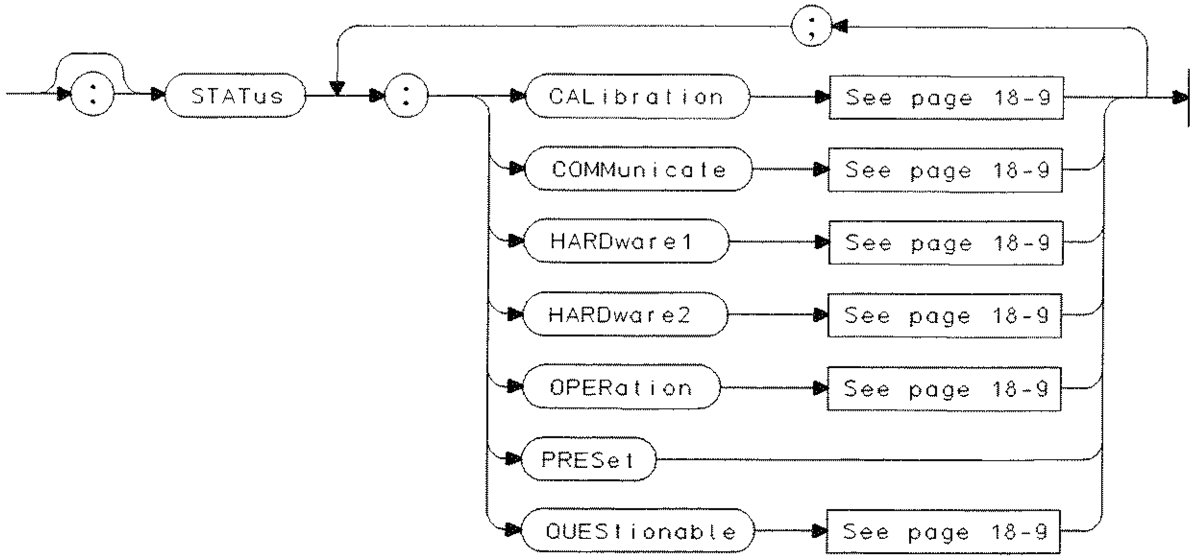

Figure 20-1. STATus Syntax Diagram

STATus:CALibration

The STATus:CALibration series of commands allows you to poll information on some of the HP 8923B's internal functions. The Sampler, Counter and Voltmeter can all be tested and queried using this command.

STATus:CALibration has several commands associated with it. These are:

- STATus:CALibration:CONDition?
- STATus:CALibration:ENABle[?]
- STATus:CALibration[:EVENt]?
- STATus:CALibration:NTRansition[?]
- STATus:CALibration:PTRansition[?]

Refer to "Additional Commands in the STATus Subsystem" at the end of this chapter for additional related commands.

STATus:COMMunicate

The STATus:COMMunicate series of commands allows you to query the status of the HP 8923B. This includes any communication failures as well as the current transmit/receive state.

Status:COMMunicate has several commands associated with it. These are:

- STATus:COMMunicate:CONDition?
- STATus:COMMunicate:ENABle[?]
- STATus:COMMunicate[:EVENt]?
- STATus:COMMunicate:NTRansition[?]
- STATus:COMMunicate:PTRansition[?]

Refer to "Additional Commands in the STATus Subsystem" at the end of this chapter for additional related commands.

STATus:HARDware1

The STATus:HARDware1 series of commands allows you read the state of the power-up self test.

STATus:HARDware1 has several commands associated with it. These are:

- STATus:HARDware1:CONDition?
- STATus:HARDware1:ENABle[?]
- STATus:HARDware1[:EVENt]?
- STATus:HARDware1:NTRansition[?]
- STATus:HARDware1:PTRansition[?]

Refer to "Additional Commands in the STATus Subsystem" at the end of this chapter for additional related commands.

STATus:HARDware2

The STATus:HARDware2 series of commands allows you read the state of the pattern and trigger selection and the analyzer coupling.

STATus:HARDware2 has several commands associated with it. These are:

- STATus:HARDware2:CONDition?
- STATus:HARDware2:ENABle[?]
- STATus:HARDware2[:EVENt]?
- STATus:HARDware2:NTRansition[?]
- STATus:HARDware2:PTRansition[?]

Refer to "Additional Commands in the STATus Subsystem" at the end of this chapter for additional related commands.

STATus:OPERation

The STATus:OPERation series of commands allows you to describes the operation of the HP 8923B.

STATus:OPERation has several commands associated with it. These are:

- STATus:OPERation:CONDition?
- STATus:OPERation:ENABle[?]
- STATus:OPERation[:EVENt]?
- STATus:OPERation:NTRansition[?]
- STATus:OPERation:PTRansition[?]

Refer to "Additional Commands in the STATus Subsystem" at the end of this chapter for additional related commands.

STATus:PRESet

The STATus:PRESet command set the status of the HP 8923B to its default condition.

Command Syntax

STATus:PRESet

STATus:QUEStionable

The STATus:QUEStionable series of commands allows you to read the status of the instrument calibration.

Status:QUEStionable has several commands associated with it. These are:

- STATus:QUEStionable:CONDition?
- STATus:QUEStionable:ENABle[?]
- STATus:QUEStionable[:EVENt]?
- STATus:QUEStionable:NTRansition[?]
- STATus:QUEStionable:PTRansition[?]

Refer to "Additional Commands in the STATus Subsystem" at the end of this chapter for additional related commands.

Additional Commands in the STATus Subsystem

These subcommands refer to the following commands in the STATus Subsystem:

- STATus:CALibration
- STATus:COMMunicate
- STATus:HARDware1
- STATus:HARDware2
- STATus:OPERation
- STATus:QUEStionable

Refer to Figure 20-2 for diagrammatic information on the way the subcommands are implemented in the subsystem.

:CONDition?

The condition register indicates the current/instantaneous condition of the register.

Query Syntax - `<command>:CONDition?`
Return Format - Integer

:ENABle

The enable register selects which event bits in the corresponding event register will cause a TRUE summary register when set.

Command Syntax - `<command>:ENABle <integer>`
Query Syntax - `<command>:ENABle?`
Return Format - Integer

[:EVENt]?

The event register captures changes in conditions. Each event bit in an event register corresponds to the condition bit in the condition register.

Query Syntax - `<command>[:EVENt]?`

:NTRansition

The negative transition filter indicates that the change captured by the event register corresponding bit will be TRUE(1) to FALSE(0) condition.

Command Syntax - `<command>:NTRansition <integer>`
Query Syntax - `<command>:NTRansition?`
Return Format - Integer

:PTRansition

The negative transition filter indicates that the change captured by the event register corresponding bit will be FALSE(0) to TRUE(1) condition.

Command Syntax - `<command>:PTRansition <integer>`
Query Syntax - `<command>:PTRansition?`
Return Format - Integer

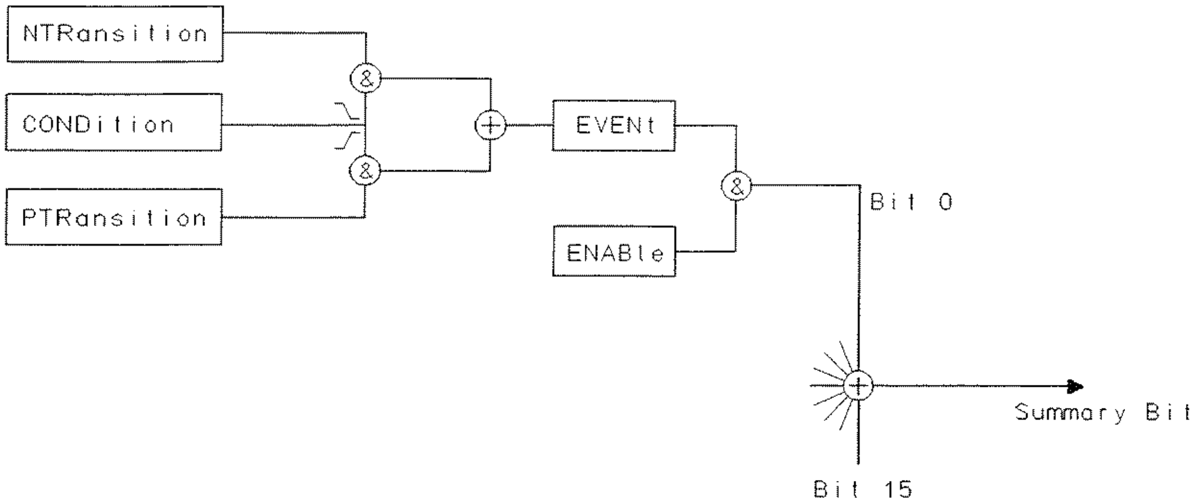

Figure 20-2. Additional Commands Syntax Diagram

SYSTem Subsystem

The SYSTem subsystem provides access to error information.

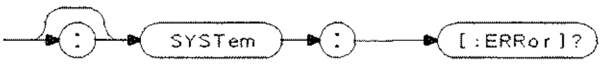

Figure 21-1. SYSTem Syntax Diagram

SYSTem[:ERRor]?

This command queries the HP 8923B error queue. The error queue is a FIFO, when there are no errors or all errors have been read it will return 0,"No Error"

Query Syntax

SYSTem[:ERRor]?

Return Format

Integer

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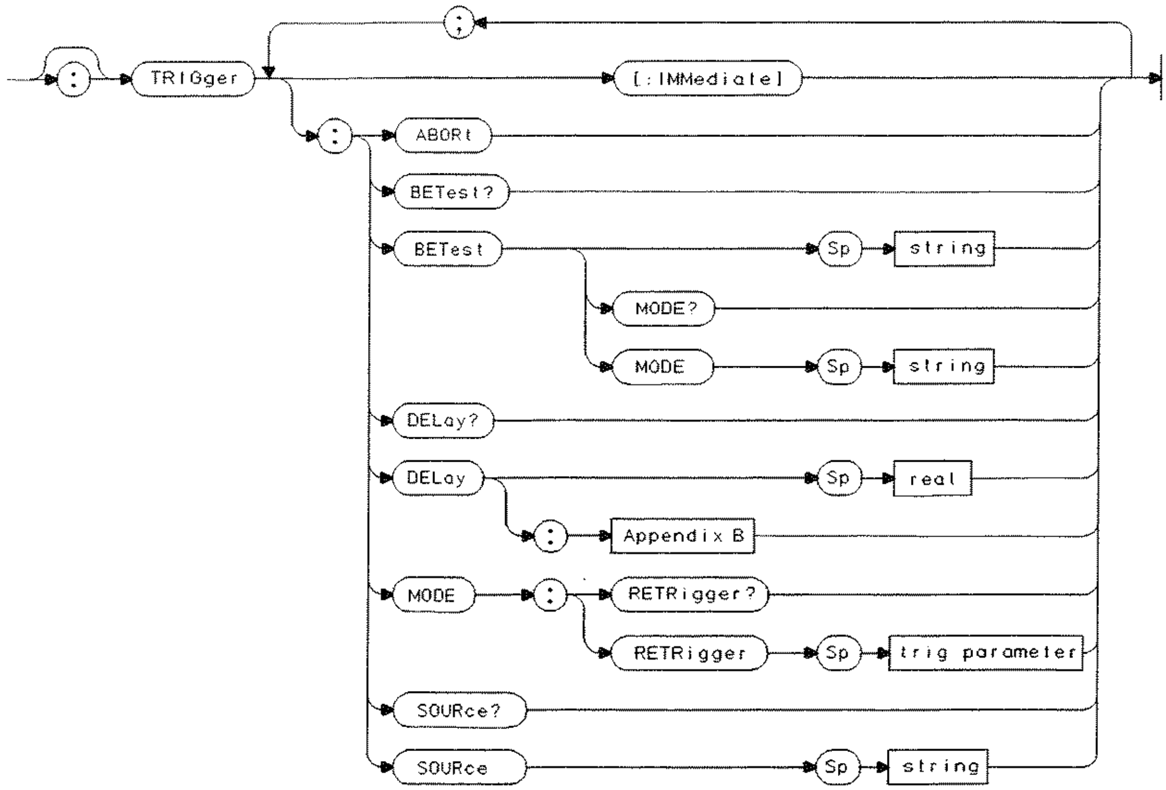
TRIGger Subsystem

This subsystem controls the HP 8923B's triggering.



TRIGger Syntax Diagram

TRIGger[:IMMediate]

This command instructs the instrument to trigger.

Command Syntax

TRIGger
or
TRIGger:IMMediate

Example Statements

```
OUTPUT 714;"TRIGger"
```
or
```
OUTPUT 714;"TRIGger:IMMediate"
```

TRIGger:ABORt

This command instructs the instrument to abort its triggering.

Command Syntax

TRIGger:ABORt

Example Statements

```
OUTPUT 714;"TRIGger:ABORt"
```

TRIGger:BETest

This command sets the BER measurement to run or stop.

Command Syntax

TRIGger:BETest <string>
    Where <string> = 'Run' | 'Stop'

Example Statements

```
OUTPUT 714;"TRIGger:BETest 'Run'"
```

Query Syntax

TRIGger:BETest?

Return Format

String

TRIGger:BETest:MODE

This command sets the BER measurement to run continuously or singly.

Command Syntax

TRIGger:BETest:MODE <string>
Where <string> = 'Sngl' | 'Cont'

Example Statements

OUTPUT 714;"TRIGger:BETest:MODE 'Cont'"

Query Syntax

TRIGger:BETest:MODE?

Return Format

String

TRIGger:DELay

This command sets the trigger delay.

Note This command only has effect when the trigger source is external.

Command Syntax

TRIGger:DELay <value> [<units_parameter> (optional)]
Where <value> = a real number
Where <units_parameter> = 'US' | 'MS' | 'S' | 'T'

Example Statements

OUTPUT 714;"TRIGger:DELay 4 MS"

Query Syntax

TRIGger:DELay?

Return Format

Real

See Appendix B for additional related commands.

TRIGger:MODE:RETRigger

This command sets the triggering for measurements to be continuous/repetitive or single. Single triggering of measurements is only available in REMOTE mode. When the HP 8923B is returned to manual control (LOCAL) the triggering of measurements is continuous.

Command Syntax

TRIGger:MODE:RETRigger <trigger_parameters>
Where <trigger_parameters> = REPetitive | SINGle

Example Statements

OUTPUT 714;"TRIGger:MODE:RETRigger REPetitive"

Query Syntax

TRIGger:MODE:RETRigger?

Return Format

String

TRIGger:SOURce

This command sets the trigger source for measurements.

Command Syntax

TRIGger:SOURce <string>
Where <string> = 'Ext' | 'RF Rise' | 'Traffic' | 'Dummy'

Example Statements

OUTPUT 714;"TRIGger:SOURce 'RF Rise'"

Query Syntax

TRIGger:SOURce?

Return Format

String

23

Example Programs

This chapter contains four example HP-IB programs. All of the example programs are written in HP BASIC.

Example Program 1

This example program demonstrates the following:

- Call setup for a portable part (or fixed part with a simple modification).
- Querying Frequency, Power, and BER measurements.
- Using Serial Polling to determine the existence of a call.

```
10    COM /Addr/ @Hp8923,INTEGER Status_byte,Comm_event,Errno,Err_mess$[200]
20    CLEAR SCREEN
30    DIM Rise$[7]
40    DIM Mid$[7]
50    DIM Fall$[7]
60    DIM Mask$[25]
70    DIM Part_to_test$[11]
80    Part_to_test$="'portable'"  ! set Part_to_test$="'fixed'" to test fixed part
90    !
100   ASSIGN @Hp8923 TO 714
110   !
120   ! Setup RF output and input levels
130   OUTPUT @Hp8923;"RFG:AMPL -10" ! RFGenerators default units are DBM
140   OUTPUT @Hp8923;"RFAN:AMPL 24" ! RFANalyzer defaults units are DBM
150   !
160   ! Call setup parameters
170   !
180   OUTPUT @Hp8923;"disp call"
190   !
200   !      Part to be tested
210   OUTPUT @Hp8923;"DECT:EUT "&Part_to_test$
220   !
230   SELECT Part_to_test$
240   CASE "'portable'"
250   !
260   !      Dummy bearer physical channel
270     OUTPUT @Hp8923;"DECT:PP:DUMMY:CARRIER 0" ! RANGE 0 to 9
280     OUTPUT @Hp8923;"DECT:PP:DUMMY:SLOT 0"    ! RANGE 0 to 11
290   !
300   !      Traffic bearer physical channel
310     OUTPUT @Hp8923;"DECT:PP:TRAFFIC:CARRIER 0"! RANGE 0 to 9
320     OUTPUT @Hp8923;"DECT:PP:TRAFFIC:SLOT 2"  ! RANGE 0 to 11
330   !
```

```
340   !      PARI
350     OUTPUT @Hp8923;"DECT:PARI '000049D3A'"   ! string of 9 hex characters
360   !
370   !  START TRANSMITTING DUMMY BEARER
380     OUTPUT @Hp8923;"DECT:PP:DUMMY:STATE ON"
390   !
400     BEEP
410     DISP "Press continue when PP is locked to dummy bearer."
420     PAUSE ! Wait until PP is in Test Standby mode and locked to dummy
430     DISP
440     GOSUB Set_for_call! prepare status for traffic bit
450   !
460   ! Start setting up a traffic bearer
470     Call_start=TIMEDATE
480     OUTPUT @Hp8923;"DECT:PP:TRAFFIC:CONNECT"
490   !
500   CASE "'fixed'"
510   !
520   !  Traffic bearer physical channel
530   !      Dummy bearer fields are read only when testing fixed parts
540   !      since the dummy bearer is defined by the fixed part itself.
550     OUTPUT @Hp8923;"DECT:FP:TRAFFIC:CARRIER 0"       ! Range 0 to 9
560     OUTPUT @Hp8923;"DECT:FP:TRAFFIC:SLOT 2"          ! Range 0 to 11
570   !
580   !      Set PMID only if FP requires it for access
590     OUTPUT @Hp8923;"DECT:PMID '00195'"   ! string of 5 hex characters
600   !
610     GOSUB Set_for_lock        ! prepare status for dummy bit
620   !
630   !  Start synchronising to the dummy bearer
640     OUTPUT @Hp8923;"DECT:FP:DUMMY:SYNC"
650   !
660     GOSUB Test_for_locked
670   !
680     GOSUB Set_for_call! prepare status for traffic bit
690   !
700   ! Start setting up the traffic bearer
710     OUTPUT @Hp8923;"DECT:FP:TRAFFIC:CONNECT"
720   !
730   END SELECT
740   !
750   GOSUB Test_for_call
760   !
770   Tstart=TIMEDATE
780   !
790   ! Setup triggering from the traffic bearer.
800   OUTPUT @Hp8923;"TRIG:SOURCE 'traffic'"
810   !
820   ! Setup single triggering of measurements
830   OUTPUT @Hp8923;"TRIG:MODE:RETR SING"
840   !
850   ! Measure frequency accuracy
860   OUTPUT @Hp8923;"DISP FREQ;:MEAS:PATTERN 'facc';:TRIG:IMM"
870   OUTPUT @Hp8923;"MEAS:RF:FREQ:ACC?"
880   ENTER @Hp8923;Freq
```

```
890   PRINT "Freq Acc:";TAB(25);Freq/1000;"kHz"
900   !
910   !Measure frequency deviation
920   OUTPUT @Hp8923;"MEAS:PATTERN 'fdev2_fs';:TRIG:IMM"
930   OUTPUT @Hp8923;"MEAS:RF:FREQ:DEV:ZERO:BMAX?;BMIN?;BAV?"
940   ENTER @Hp8923;Max0;Min0;Avg0
950   OUTPUT @Hp8923;"MEAS:RF:FREQ:DEV:ONE:BMAX?;BMIN?;BAV?"
960   ENTER @Hp8923;Max1;Min1;Avg1
970   !
980   ! Measure frequency drift; must have pattern 'fdev2_fs' set
990   OUTPUT @Hp8923;"MEAS:RF:FREQ:DRIFT?"
1000  ENTER @Hp8923;Drift
1010  !
1020  PRINT "Freq Drift:";TAB(25);Drift/1000;"kHz"
1030  PRINT
1040  PRINT "Freq Dev(0) Max:";TAB(25);Max0/1000;"kHz"
1050  PRINT "Freq Dev(0) Min:";TAB(25);Min0/1000;"kHz"
1060  PRINT "Freq Dev(0) Avg:";TAB(25);Avg0/1000;"kHz"
1070  PRINT "Freq Dev(1) Max:";TAB(25);Max1/1000;"kHz"
1080  PRINT "Freq Dev(1) Min:";TAB(25);Min1/1000;"kHz"
1090  PRINT "Freq Dev(1) Avg:";TAB(25);Avg1/1000;"kHz"
1100  !
1110  ! Measure NTP and the power time rise, mid, and fall
1120  ! pass/fail flags
1130  OUTPUT @Hp8923;"DISP NTP"
1140  OUTPUT @Hp8923;"MEAS:RF:NTP?;PTIM:MASK:RISE?;MID?;FALL?"
1150  ENTER @Hp8923;Ntp;Rise$;Mid$;Fall$
1160  PRINT
1170  PRINT "NTP:";TAB(25);Ntp;"dBm"
1180  Mask$="FAILED"
1190  IF Rise$[2;4]="FAIL" THEN Mask$=Mask$&" Rise"
1200  IF Mid$[2;4]="FAIL" THEN Mask$=Mask$&" Middle"
1210  IF Fall$[2;4]="FAIL" THEN Mask$=Mask$&" Fall"
1220  IF Mask$="FAILED" THEN Mask$="PASSED"
1230  PRINT
1240  PRINT "Power Time Template:";TAB(26);Mask$
1250  !
1260  ! Measure Bit Error Ratio and Word Error Ratio.
1270  !
1280  OUTPUT @Hp8923;"DISP BET;:RFG:AMPL -20;:TRIG:BET 'run'"
1290  OUTPUT @Hp8923;"MEAS:BET:BERR:RATIO?;:MEAS:BET:WERR:RATIO?"
1300  ENTER @Hp8923;Ber;Wer
1310  OUTPUT @Hp8923;"RFG:AMPL -10" ! reset to high level
1320  PRINT
1330  PRINT "Bit Error Ratio:";TAB(25);Ber/10000;"%"
1340  PRINT "Frame Error Ratio:";TAB(25);Wer/10000;"%"
1350  PRINT
1360  PRINT "Elapsed Time:";TAB(25);TIMEDATE-Tstart;"s"
1370  !
1380  ! Release the call on the traffic bearer.
1390  OUTPUT @Hp8923;"DECT:TRAFFIC:RELEASE"
1400  !
1410  STOP
1420  !==================================================================
1430  !
```

```
1440  !
1450 Set_for_lock: !
1460  OUTPUT @Hp8923;"*CLS" !Clear all status bits
1470  OUTPUT @Hp8923;"*SRE 4" ! set status byte interupt mask for
1480                          ! the communicate register.
1490  !
1500  ! setup communicate register enable and bit transitions
1510  OUTPUT @Hp8923;"STATUS:COMM:ENABLE 32"
1520  OUTPUT @Hp8923;"STATUS:COMM:PTR 32"
1530  RETURN
1540  !
1550  !
1560 Test_for_locked: !
1570  Sync_start=TIMEDATE
1580  LOOP
1590    Stat_byte=SPOLL(@Hp8923)
1600  EXIT IF BIT(Stat_byte,2)
1610  END LOOP
1620  PRINT "Sync time =";TIMEDATE-Sync_start
1630  RETURN
1640  !
1650  !
1660 Set_for_call: !
1670  OUTPUT @Hp8923;"*CLS" !Clear all status bits
1680  OUTPUT @Hp8923;"*SRE 4" ! set status byte interupt mask for
1690                          ! the communicate register.
1700  !
1710  ! setup communicate register enable and bit transitions
1720  OUTPUT @Hp8923;"STATUS:COMM:ENABLE 64"
1730  OUTPUT @Hp8923;"STATUS:COMM:PTR 64"
1740  RETURN
1750 !
1760 !
1770 Test_for_call:!
1780  LOOP
1790    WAIT .01
1800    Stat_byte=SPOLL(@Hp8923)
1810  EXIT IF BIT(Stat_byte,2)
1820  END LOOP
1830  PRINT "Call time =";TIMEDATE-Call_start
1840  RETURN
1850  !
1860  !
1870  END
```

Example Program 2

This example program demonstrates call setup and release for a portable part using the instruments ability to generate a service request(SRQ) based upon bits in the COMMunicate register.

BIT 6 of the COMMunicate register will be 1 when the traffic bearer is active/connected, it will be 0 when the traffic bearer is inactive/released.

```
10   Comm_eve=0                           ! clear the variable that holds
20                                        ! the communicate register value
30   !
40   Status=0                             ! clear the variable that holds
50                                        ! the status byte value
60   !
70   Bus=7                                ! Select code of HP-IB interface
80   !
90   No_print=0                           ! Set to 0 will print out status
100                                       ! byte and communicate register
110                                       ! values.
120                                       ! Set to 1 will not print out.
130  !
140  CLEAR SCREEN
150  PRINT "Connecting..."
160  !
170  ASSIGN @Hp8923 TO 714                ! Instrument HP-IB address
180  !
190  OUTPUT @Hp8923;"*RST"
200  WAIT 2
210  !
220  OUTPUT @Hp8923;"disp call"
230  OUTPUT @Hp8923;"DECT:PARI '000049D3A'"
240  !
250  !Use instrument defaults for traffic and dummy bearer
260  !
270  OUTPUT @Hp8923;"DECT:DUMMY:STATE ON"
280  !
290  ! clear the status registers then set the instrument to
300  ! generate  a Service ReQuest(SRQ) when the traffic bearer
310  ! is active/connected.
320  !
330  OUTPUT @Hp8923;"*CLS"                ! clear status registers.
340  !
350  OUTPUT @Hp8923;"*SRE 4"              ! generate an SRQ when communicate
360                                       ! register summary bit in the
370                                       ! status byte changes to 1
380  !
390  OUTPUT @Hp8923;"status:comm:enable 64" ! enable the traffic_active bit
400                                       ! of the communicate register
410  OUTPUT @Hp8923;"status:comm:ptr 64"  ! for positive transitions,
420  OUTPUT @Hp8923;"status:comm:ntr 0"   ! 0 to 1. ie traffic active
430                                       !
440  !
450  ON INTR Bus,15 GOSUB Connection_isr  ! setup computer to call interrupt
460                                       ! routine when an interrupt occurs
```

```
470                                          ! on the HP-IB
480                                          !
490   ENABLE INTR Bus;2                      ! enable the computer to accept
500                                          ! interrupts.
510   !
520   !
530   BEEP 400,.2
540   DISP "Press continue PP is locked and in test standby"
550   PAUSE
560   DISP "waiting on interrupt..."
570   !
580   Tstart=TIMEDATE
590   OUTPUT @Hp8923;"DECT:TRAFFIC:CONNECT"
600   !
610   LOOP                                   ! Wait in this loop until the
620   EXIT IF BIT(Comm_eve,6)                ! interrupt occurs
630   END LOOP
640   !
650   !
660   BEEP 4000,.3
670   PRINT "   Connection time:  ";DROUND(Tstop-Tstart,3);"S"
680   !
690   !**********************************
700   !*  Measurement code could go here *
710   !**********************************
720   !
730   DISP "Press Continue to release the call"
740   PAUSE
750   DISP "Releasing call . ."
760   PRINT
770   PRINT "Releasing"
780   !
790   Comm_eve=0
800   Status=0
810   !
820   ! clear the status registers then set the instrument to
830   ! generate  a Service ReQuest(SRQ) when the traffic bearer
840   ! is released.
850   !
860   OUTPUT @Hp8923;"*CLS"                  ! clear status registers.
870   !
880   OUTPUT @Hp8923;"*SRE 4"                ! generate an SRQ when communicate
890                                          ! register summary bit in the
900                                          ! status byte changes to 1
910   !
920   OUTPUT @Hp8923;"status:comm:enable 64" ! enable the traffic_active bit
930                                          ! of the communicate register
940   OUTPUT @Hp8923;"status:comm:ntr 64"    ! for only negative transitions,
950   OUTPUT @Hp8923;"status:comm:ptr 0"     ! 1 to 0. ie traffic inactive
960                                          !
970   !
980   ON INTR Bus,15 GOSUB Connection_isr    ! setup computer to call interrupt
990                                          ! routine when an interrupt occurs
1000                                         ! on the HP-IB
1010                                         !
```

```
1020  ENABLE INTR Bus;2                        ! enable the computer to accept
1030                                           ! interrupts.
1040  !
1050  !
1060  DISP "waiting on interrupt..."
1070  !
1080  Tstart=TIMEDATE
1090  OUTPUT @Hp8923;"DECT:TRAFFIC:RELEASE"
1100  !
1110  LOOP                                     ! Wait in this loop until the
1120  EXIT IF BIT(Comm_eve,6)                  ! interrupt occurs
1130  END LOOP
1140  !
1150  BEEP 4000,.3
1160  PRINT "   Release time:     ";DROUND(Tstop-Tstart,3);"S"
1170  !
1180  DISP "Released and program stopped. "
1190  STOP
1200  !
1210 Connection_isr:  !
1220  OFF INTR                                 ! Disable interrupts
1230  IF No_print THEN GOSUB Read_comms
1240  IF No_print THEN RETURN
1250  PRINT "  Subroutine Connection_isr"
1260  PRINT
1270  !
1280  GOSUB Read_status                        ! Read status byte
1290  GOSUB Read_comms                         ! read the communicate register
1300  RETURN
1310  !
1320 Read_comms:!
1330  !
1340  OUTPUT @Hp8923;"status:comm:event?"      ! query communicate event register
1350  ENTER @Hp8923;Comm_eve
1360  !
1370  IF BIT(Comm_eve,6) THEN Tstop=TIMEDATE
1380  IF No_print THEN RETURN
1390  !
1400  DIM Comm_eve$[32]
1410  Comm_eve$=DVAL$(Comm_eve,2)
1420  PRINT "   Communicate event:";            ! an easy to read register bit
1430  FOR X=1 TO 29 STEP 4                     ! representation
1440    PRINT " "&Comm_eve$[X;4];
1450  NEXT X
1460  PRINT "||"&VAL$(Comm_eve)                ! append decimal value of register
1470  !
1480  OUTPUT @Hp8923;"status:comm:cond?"       ! query the communicate condition
1490  ENTER @Hp8923;Comm_cond                  ! register.
1500  DIM Comm_cond$[32]
1510  Comm_cond$=DVAL$(Comm_cond,2)
1520  PRINT "   Communicate cond: ";            ! an easy to read register bit
1530  FOR X=1 TO 29 STEP 4                     ! representation
1540    PRINT " "&Comm_cond$[X;4];
1550  NEXT X
1560  PRINT "||"&VAL$(Comm_cond)               ! append decimal value of register
```

```
1570  RETURN
1580  !
1590 Read_status: !
1600  DIM Status$[32]
1610  OUTPUT @Hp8923;"*STB?"                  ! read status byte
1620  ENTER @Hp8923;Status
1630  !
1640  Status$=DVAL$(Status,2)
1650  PRINT "   Status byte:       ";Status$[25;4];" ";
1660  PRINT Status$[29;4]&"||"&VAL$(Status)
1670  RETURN
1680  !
1690  END
```

Example Program 3

This example programme demonstrates dummy bearer synchronisation, call setup and call release when the EUT is a fixed part. The programme uses the HP8923B's ability to generate a service request(SRQ) based upon bits in the COMMunicate register.

The programme assumes that the fixed part being tested is in test standby mode.

BIT 5 of the COMMunicate register will be 1 when the HP8923B has synchronised/locked to a dummy bearer, it will be 0 when the instrument cannot find a dummy bearer.

BIT 6 of the COMMunicate register will be 1 when the traffic bearer is active/connected, it will be 0 when the traffic bearer is inactive/released.

```
10    Comm_eve=0                              ! clear the variable that holds
20                                            ! the communicate register value
30    !
40    Status=0                                ! clear the variable that holds
50                                            ! the status byte value
60    !
70    Bus=7                                   ! Select code of HP-IB interface
80    !
90    No_print=0                              ! Set to 0 will print out status
100                                           ! byte and communicate register
110                                           ! values.
120                                           ! Set to 1 will not print out.
130   !
140   CLEAR SCREEN
150   PRINT "Synchronising..."
160   !
170   ASSIGN @Hp8923 TO 714                   ! Instrument HP-IB address
180   !
190   OUTPUT @Hp8923;"*RST"
200   WAIT 2
210   !
220   OUTPUT @Hp8923;"disp call"              ! Show the call screen so that
230                                           ! the call status can be seen
240                                           !
250   OUTPUT @Hp8923;"DECT:EUT 'Fixed'"
260   OUTPUT @Hp8923;"DECT:PMID '00195'"
270   !
280   !*******************************************
290   !* Synchronise to Fixed Part's Dummy Bearer *
300   !*******************************************
310   !
320   ! clear the status registers then set the instrument to
330   ! generate  a Service ReQuest(SRQ) when the dummy bearer
340   ! is active/locked.
350   !
360   OUTPUT @Hp8923;"*CLS"                   ! clear status registers.
370   !
380   OUTPUT @Hp8923;"*SRE 4"                 ! generate an SRQ when communicate
390                                           ! register summary bit in the
400                                           ! status byte changes to 1
410   !
420   OUTPUT @Hp8923;"status:comm:enable 32" ! enable the dummy_active bit
```

```
430                                      ! of the communicate register
440  OUTPUT @Hp8923;"status:comm:ptr 32"  ! for positive transitions,
450  OUTPUT @Hp8923;"status:comm:ntr 0"   ! 0 to 1. ie dummy active
460                                      !
470  !
480  ON INTR Bus,15 GOSUB Connection_isr  ! setup computer to call interrupt
490                                      ! routine when an interrupt occurs
500                                      ! on the HP-IB
510                                      !
520  Test_bit=5                          ! bit number in communicate
530                                      ! register for dummy_bearer
540                                      !
550  ENABLE INTR Bus;2                   ! enable the computer to accept
560                                      ! interrupts.
570  !
580  !
590  Tstart=TIMEDATE
600  OUTPUT @Hp8923;"DECT:DUMMY:SYNC"    ! instruct 8923 to start searching
610                                      ! for a dummy bearer.
620  !
630  LOOP                                ! Wait in this loop until the
640  EXIT IF BIT(Comm_eve,Test_bit)      ! interrupt occurs
650  END LOOP
660  !
670  !
680  BEEP 4000,.3
690  PRINT "   Sychronisation time: ";DROUND(Tstop-Tstart,3);"S"
700  !
710  !
720  PRINT
730  PRINT "Connecting..."
740  !**********************************
750  !* Setup a call to the Fixed Part *
760  !**********************************
770  !
780  ! clear the status registers then set the instrument to
790  ! generate  a Service ReQuest(SRQ) when the traffic bearer
800  ! is active/connected.
810  !
820  OUTPUT @Hp8923;"*CLS"                  ! clear status registers.
830  !
840  OUTPUT @Hp8923;"*SRE 4"                ! generate an SRQ when communicate
850                                         ! register summary bit in the
860                                         ! status byte changes to 1
870  !
880  OUTPUT @Hp8923;"status:comm:enable 64" ! enable the traffic_active bit
890                                         ! of the communicate register
900  OUTPUT @Hp8923;"status:comm:ptr 64"    ! for positive transitions,
910  OUTPUT @Hp8923;"status:comm:ntr 0"     ! 0 to 1. ie traffic active
920                                         !
930  !
940  ON INTR Bus,15 GOSUB Connection_isr    ! setup computer to call interrupt
950                                         ! routine when an interrupt occurs
960                                         ! on the HP-IB
970                                         !
```

```
980   Test_bit=6                              ! bit number in communicate
990                                           ! register for traffic bearer
1000                                          !
1010                                          !
1020  ENABLE INTR Bus;2                       ! enable the computer to accept
1030                                          ! interrupts.
1040  !
1050  !
1060  Tstart=TIMEDATE
1070  OUTPUT @Hp8923;"DECT:TRAFFIC:CONNECT"
1080  !
1090  LOOP                                    ! Wait in this loop until the
1100  EXIT IF BIT(Comm_eve,Test_bit)          ! interrupt occurs
1110  END LOOP
1120  !
1130  !
1140  BEEP 4000,.3
1150  PRINT "   Connection time: ";DROUND(Tstop-Tstart,3);"S"
1160  !
1170  !**********************************
1180  !*  Measurement code could go here *
1190  !**********************************
1200  !
1210  DISP "Press Continue to release the call"
1220  PAUSE
1230  DISP "Releasing call . ."
1240  PRINT
1250  PRINT "Releasing..."
1260  !
1270  Comm_eve=0
1280  Status=0
1290  !
1300  ! clear the status registers then set the instrument to
1310  ! generate  a Service ReQuest(SRQ) when the traffic bearer
1320  ! is released.
1330  !
1340  OUTPUT @Hp8923;"*CLS"                   ! clear status registers.
1350  !
1360  OUTPUT @Hp8923;"*SRE 4"                 ! generate an SRQ when communicate
1370                                          ! register summary bit in the
1380                                          ! status byte changes to 1
1390  !
1400  OUTPUT @Hp8923;"status:comm:enable 64"  ! enable the traffic_active bit
1410                                          ! of the communicate register
1420  OUTPUT @Hp8923;"status:comm:ntr 64"     ! for only negative transitions,
1430  OUTPUT @Hp8923;"status:comm:ptr 0"      ! 1 to 0. ie traffic inactive
1440                                          !
1450  !
1460  ON INTR Bus,15 GOSUB Connection_isr     ! setup computer to call interrupt
1470                                          ! routine when an interrupt occurs
1480                                          ! on the HP-IB
1490                                          !
1500  Test_bit=6                              ! bit number in communicate
1510                                          ! register for traffic bearer
1520                                          !
```

```
1530                                      !
1540  ENABLE INTR Bus;2                   ! enable the computer to accept
1550                                      ! interrupts.
1560  !
1570  !
1580  DISP "waiting on interrupt..."
1590  !
1600  Tstart=TIMEDATE
1610  OUTPUT @Hp8923;"DECT:TRAFFIC:RELEASE"
1620  !
1630  LOOP                                ! Wait in this loop until the
1640  EXIT IF BIT(Comm_eve,Test_bit)      ! interrupt occurs
1650  END LOOP
1660  !
1670  BEEP 4000,.3
1680  PRINT "   Release time:     ";DROUND(Tstop-Tstart,3);"S"
1690  !
1700  DISP "Released and program stopped. "
1710  STOP
1720  !
1730 Connection_isr:  !
1740  OFF INTR                            ! Disable interrupts
1750  IF No_print THEN GOSUB Read_comms
1760  IF No_print THEN RETURN
1770  PRINT "  Subroutine Connection_isr"
1780  PRINT
1790  !
1800  GOSUB Read_status                   ! Read status byte
1810  GOSUB Read_comms                    ! read the communicate register
1820  RETURN
1830  !
1840 Read_comms:!
1850  !
1860  OUTPUT @Hp8923;"status:comm:event?"    ! query communicate event register
1870  ENTER @Hp8923;Comm_eve
1880  !
1890  IF BIT(Comm_eve,Test_bit) THEN Tstop=TIMEDATE
1900  IF No_print THEN RETURN
1910  !
1920  DIM Comm_eve$[32]
1930  Comm_eve$=DVAL$(Comm_eve,2)
1940  PRINT "   Communicate event:";        ! an easy to read register bit
1950  FOR X=1 TO 29 STEP 4                ! representation
1960    PRINT " "&Comm_eve$[X;4];
1970  NEXT X
1980  PRINT "||"&VAL$(Comm_eve)           ! append decimal value of register
1990  !
2000  OUTPUT @Hp8923;"status:comm:cond?"   ! query the communicate condition
2010  ENTER @Hp8923;Comm_cond             ! register.
2020  DIM Comm_cond$[32]
2030  Comm_cond$=DVAL$(Comm_cond,2)
2040  PRINT "   Communicate cond: ";      ! an easy to read register bit
2050  FOR X=1 TO 29 STEP 4                ! representation
2060    PRINT " "&Comm_cond$[X;4];
2070  NEXT X
```

```
2080  PRINT "||"&VAL$(Comm_cond)             ! append decimal value of register
2090  RETURN
2100  !
2110 Read_status: !
2120  DIM Status$[32]
2130  OUTPUT @Hp8923;"*STB?"                 ! read status byte
2140  ENTER @Hp8923;Status
2150  !
2160  Status$=DVAL$(Status,2)
2170  PRINT "   Status byte:       ";Status$[25;4];" ";
2180  PRINT Status$[29;4]&"||"&VAL$(Status)
2190  RETURN
2200  !
2210  END
```

Example Program 4

This example programme demonstrates reading the trace display from the oscilloscope screen and displaying the measured data either in numeric or graphical form. The internal audio source is the measured signal.

```
10    COM /Osc/ Osc_trace(1:417),Scale_volts
20    !
30    ASSIGN @Hp8923 TO 714
40    OUTPUT @Hp8923;"*RST"
50    WAIT 2
60    !
70    CLEAR SCREEN
80    !
90    ! Switch to the audio screen, select an audio frequency
100   ! and turn on the audio source.
110   !
120   OUTPUT @Hp8923;"disp aud"
130   OUTPUT @Hp8923;"afg:stat 'on'"
140   OUTPUT @Hp8923;"afg:freq '400Hz'"
150   !
160   ! Prompt user to make connections
170   !
180   PRINT TABXY(1,10)
190   PRINT "Connect the 'AUDIO OUT' connector on the front panel"
200   PRINT "......to the 'AUDIO IN' connector on the front panel"
210   BEEP 400,.2
220   DISP "press Continue when connection is made"
230   PAUSE
240   DISP
250   CLEAR SCREEN
260   !
270   ! Switch to the oscilloscope screen and to its volt/time controls
280   ! Change the timebase to get a few cycles on the screen
290   ! Change the scaling to get a taller trace
300   OUTPUT @Hp8923;"disp osc"
310   OUTPUT @Hp8923;"disp:osc 'volt/time'"
320   OUTPUT @Hp8923;"osc:scale:time '1 ms'"
330   !
340   OUTPUT @Hp8923;"osc:scale:vert:volt '500 mV'"
350   Scale_volts=.5  ! should always be set to the same value in volts
360                   ! as the vertical scale
370   !
380   ! Read the 417 trace points into the array.
390   !
400   OUTPUT @Hp8923;"meas:aud:osc:trace?"
410   ENTER @Hp8923;Osc_trace(*)
420   !
430   ! Setup menu for user to view the trace results either as the direct
440   ! array contents or as a graphical trace.
450   !
460 Menu:LOOP
470     CLEAR SCREEN
480     BEEP 6000,.2
490     PRINT TABXY(1,10);"To view the trace press     't'"
```

```
500      PRINT TABXY(1,11);"To view the trace data press 'd'"
510      PRINT TABXY(1,12);"To exit programme press      'q'"
520      INPUT "Input Choice?",View$
530    EXIT IF LWC$(View$)="q"
540      IF LWC$(View$)="t" THEN GOSUB Show_trace
550      IF LWC$(View$)="d" THEN GOSUB Show_data
560    END LOOP
570    !
580    CLEAR SCREEN
590    DISP "Programme Stopped"
600    STOP
610    !
620    !
630  Show_data:!
640    !Displays the contents of the trace array
650    ! a screenfull at a time
660    !
670    Lastx=1
680    CLEAR SCREEN
690    PRINT "Trace data"
700    FOR X=1 TO 417
710      PRINT "["&VAL$(X)&" of "&VAL$(417)&"] ",Osc_trace(X)
720      IF X=Lastx+18 THEN
730        Lastx=X
740        DISP "Press continue to see more data"
750        PAUSE
760        DISP
770      END IF
780    NEXT X
790    DISP "Press Continue to return to Menu"
800    PAUSE
810    DISP
820    RETURN
830    !
840    !
850  Show_trace:!
860    ! Display the contents of the trace array
870    ! as a graphical trace.
880    !
890    CLEAR SCREEN                       ! clear any text on the screen
900    GINIT                              ! initialize the graphics
910    PLOTTER IS CRT,"INTERNAL"          ! Use the internal screen
920    GRAPHICS ON                        ! Turn on the graphics screen
930    !
940    X_max=100*MAX(1,RATIO)             ! Determine how wide the screen is
950    Y_max=100*MAX(1,1/RATIO)           ! Determine how high the screen is
960    !
970    ! Define subset of screen area so that the graph and the prompt
980    ! line can both be seen
990    !
1000   VIEWPORT .01*X_max,.99*X_max,.26*Y_max,.99*Y_max
1010   !
1020   ! Scale the Window based on the known data range
1030   !
1040   WINDOW 1,420,-4*Scale_volts,4*Scale_volts
```

```
1050 !
1060 ! Draw axes and grid for the trace
1070 !
1080 PEN 1
1090 LINE TYPE 4
1100 AXES 42,.5,0,0,1,1,2
1110 AXES 42,.5,1,417,4,5,4
1120 GRID 21,Scale_volts,0,0,2,1
1130 !
1140 ! Plot the trace data
1150 !
1160 PEN 1
1170 LINE TYPE 1
1180 FOR X=1 TO 417
1190   PLOT X,Osc_trace(X)
1200 NEXT X
1210 DISP "Press Continue to return to Menu"
1220 PAUSE
1230 DISP
1240 RETURN
1250 !
1260 END
```

A

Appendix A

Definition of the Units Used in HP-IB Programming

Display Units (DUNits)

Display Units are those shown on the HP 8923B's screen; the full set of units used to manually control the instrument. For instance; Hz, kHz, MHz, and GHz can all be used to set and display the RF Generator frequency.

Changing Display Units

Use the DUNits syntax to change the Display Unit for any measurement unit, or setting. For example, to change the Display Unit for the output amplitude from dBm to Watts, you would enter the following BASIC command:

```
OUTPUT 714;"RFG:AMPL:DUN W"
```

Display Units	HP-IB Syntax Examples
GHz	MEAS:RF:FREQ:ACC:DUN GHZ
MHz	MEAS:RF:FREQ:ACC:DUN MHZ
kHz	MEAS:RF:FREQ:ACC:DUN KHZ
Hz	MEAS:RF:FREQ:ACC:DUN HZ
ppm	MEAS:BET:BERR:RAT:DUN PPM
%	MEAS:BET:BERR:RAT:DUN PCT
V	MEAS:AUD:DCV:DUN V
mV	MEAS:AUD:DCV:DUN MV
μV	RFG:AMPL:DUN UV
dBμV	RFG:AMPL:DUN DBUV
W	RFG:AMPL:DUN W
mW	RFG:AMPL:DUN MW
dBm	RFG:AMPL:DUN DBM
db	RFG:AMPL:DUN DB

Reading-Back Display Units

Use the DUNits? syntax for a measurement or setting to read-back its Display Unit. For example, to read the Display Unit for the Rise measurement, you would enter these BASIC commands:

```
OUTPUT 714;"MEAS:RF:NTP:DUNits?" ! Read Display Units for Normal Tx Power .
ENTER 714;A$          ! Enter the returned value into a string variable.
PRINT A$          ! Print the units.
```

The returned value will be the unit displayed on the HP 8923B's front-panel display for the measurement: dBm, V, mV, dBμV, or W. (Note: all returned characters are in upper case. Example; dBμV displayed returns DBUV.)

Guidelines for Display Units

- Querying measurements over HP-IB always returns numeric values in fundamental units, regardless of the current Display Unit.
- You can always use any appropriate Display Unit for a setting or measurement to display the value on the HP 8923B, regardless of its HP-IB Unit.
- The Display Unit for a numeric field is not affected when the field's value is changed over HP-IB.

  For example, if the `RFG:AMPL` field is set to 0.0001 W, and you send the command RFG:AMPL 0.09 mW, the instrument displays '0.00009 W'; not 0.09 mW.

HP-IB UNITs

The :UNITs command is used to set the HP-IB units for a field. The HP-IB unit determines the units in which a query of a particular field is returned, and the default unit for setting. All :UNITs commands can only use fundamental units, that is, Hz for frequency, seconds for time, volts for voltage, and watts/dBm for power.

Changing HP-IB units has no effect on the front-panel display units. Use the UNITs syntax to change the HP-IB unit.

Table A-1. Units for HP-IB Programming

Parameter	HP-IB Unit
Bit Error	'PPM', 'PCT'
Amplitude	'V', 'W'
Frequency	'HZ',
Time	'S', 'T'
Trace Displays	'DIV'

A field can be set in units other than the HP-IB units. Where normal multiples can be applied to fundamental units, the field can be set using these. A frequency field which always returns values in Hz can be set using KHZ, MHZ, or GHZ as a unit qualifies to the value setting, for example, `RFAN:FREQ 1881 MHZ`.

Reading-Back HP-IB Units

Use the UNITs? syntax for a measurement or setting to determine its HP-IB unit. For example, to determine the HP-IB Unit for the `NTP` measurement, you would enter these BASIC commands:

```
OUTPUT 714;"MEAS:RF:NTP:UNITs?"  ! Read HP-IB Units for Power-time.
ENTER 714;A$                     ! Enter the returned value into a string variable.
PRINT A$                         ! Print the units.
```

In this example, 'W' would be printed (Watts).

Guidelines for HP-IB Units

- When changing a numeric setting, any non-HP-IB unit must be specified in the HP-IB command, or the HP-IB Unit is assumed by the HP 8923B to be the default HP-IB unit.

For example, if the `Freq` field is already set to 1850 MHz, and you send the command

```
RFG:FREQ 1900
```

the HP 8923B interprets that you are trying to set it to 1900 Hz, and results in an "Input value out of range" error. Sending the command

```
RFG:FREQ 1900 MHz
```

would set the value to 1900 MHz.

The returned numeric value for a measurement is *always* in HP-IB units, regardless of the displayed units. The numeric value is expressed in scientific notation.

For example, if the `Frequency` measurement is shown as 1850.000000 MHz on the HP 8923B's display, the returned value over HP-IB is 1.85000000E+009 (or 1.85×10^{9}). To convert the returned value to a non-HP-IB unit, you must enter the value into a conversion formula in your program.

Attribute Units (AUNits)

Attribute units are used with the measurement Data Function, REF SET. AUNits provide a way to remotely query and change the units used to define a Data Function's value.

Attribute units use the same set of units as HP-IB units, but are only applied to the measurement Data Functions.

Changing Attribute Units

Some measurements can use more than one Attribute unit. For example, the bit error measurement allows you to set a Reference in units of ppm or %.

The Display Units shown on the HP 8923B's front panel are not affected by changing Attribute Units. However, the Reference value and unit returned over HP-IB are in the new Attribute unit you specified using the above command.

Reading-back Attribute Units

Use the AUNits? syntax to read-back the Attribute unit for a measurement.

Using STATE Commands

STATe commands correspond to using the (ON/OFF) key to turn measurements, Data Functions, and settings on and off.

Use a logic one or ON to turn a measurement on; logic zero or OFF to turn a measurement off. When queried, the returned value will be either '1' (on) or '0' (off).

For example, to turn off the voltage marker, and turn on measurement averaging for the RF rise measurement, enter the following BASIC commands:

```
OUTPUT 714;"MEAS:RF:MARK:LEV:STAT 0"  !Turn off marker
OUTPUT 714;"MEAS:RF:FREQ:DEV:ZERO:BAV:STAT 1" !Turn on average measurement
```

State Command Guidelines

- All of the DATA FUNCTIONS can be turned on and off.
- Any function that generates a signal can be turned on and off.

B

Appendix B

Introduction

These commands appear predominantly in the MEASure Subsystem.

:STATe

The :STATe command activates or de-activates a measurement. All measurements default to active/on. Setting the boolean parameter to 0 of OFF turns the measurement off. Setting the boolean parameter to 1 of ON turns the measurement on.

```
<command>:STATe <boolean>
```

Where <boolean> = 0 | 1 | OFF | ON

:DUNits

The :DUNits command sets the units to be displayed on the screen. Table B-1 gives the valid :DUNits parameters for each command referred to Appendix B.

```
<command>:DUNits <display_units>
```

:UNITs

The :UNITs command sets the units of the <command> to be communicated between the instrument and the controller. Table B-1 gives the valid :UNITs parameters for each command referred to Appendix B.

```
<command>:UNits <display_units>
```

:AUNits

The Attribute units are used with making measurements using the REF, INCR SET, and AVG functions. Table B-1 gives the valid :AUNits parameters for each command referred to Appendix B.

```
<command>:AUNits <display_units>
```

:AVERage[:VALue]

The :AVERage[:VALue] command sets the number of measurements used to calculate the averaged value.

```
<command>:AVERage[:VALue] <real>
```

:AVERage:RESet

The :AVERage:RESet command resets the measurement required to make the averaged result.

```
OUTPUT 714;"<command>:AVERage:RESet"
```

:AVERage:STATe

The state of the average function can be switched on or off using this command. Enter a logic 0 to switch this off, or a logic 1 to switch this on.

```
<command>:AVERage:STATe <boolean>
```
Where <boolean> = 0 | 1 | OFF | ON

:REFerence[:VALue]

Measurements can be made from the specified reference point, (the default setting is zero). This reference point is defined by the user.

Refer to Table B-1 for information on the REFerence[:VALue] units displayed for each command using Appendix B.

```
<command>:REFerence[:VALue] <value> [<display_units>] optional
```
Where <value> = a real number

:REFerence:DUNits

The reference value displayed on the screen is defined by this command. Refer to Table B-1 for information on the REFerence:DUNits for each command using Appendix B.

```
<command>:REFerence:DUNits <display_units>
```

:REFerence:STATe

The state of the reference is defined as either being on or off. The on state is programmed as a logic one and the off state as logic zero.

```
<command>:REFerence:STATe <boolean>
```
Where <boolean> = 0 | 1 | OFF | ON.

Programming Command Guidelines

Table B-1. Programming Command Guidelines

Command	:DUN	:AUN	:UNIT	:REF:DUN	REF[:VAL]
MEAS:AUD:DCV	MV, V	V	V	MV, V	UV, MV, V
MEAS:AUD:FREQ	HZ, KHZ, MHZ	HZ	HZ	HZ,KHZ, MHZ	HZ, KHZ MHZ, GHZ
MEAS:AUD:OSC:MARK:LEV:VOLT	MV, V	V	V	MV, V	MV, V
MEAS:AUD:OSC:MARK:TIME	MS, S	S	S	MS, S	US, MS, S
MEAS:BET:BERR:RAT	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM
MEAS:BET:BERR:IRAT	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM
MEAS:BET:WERR:RAT	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM
MEAS:BET:WERR:IRAT	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM	PCT, PPM
MEAS:RF:FREQ:ACC	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DEV:ZERO:BMAX	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DEV:ZERO:BMIN	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DEV:ZERO:BAV	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DEV:ONE:BMAX	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DEV:ONE:BMIN	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DEV:ONE:BAV	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:FREQ:DRIF	HZ, KHZ, MHZ, GHZ	HZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
MEAS:RF:NTP	DBMW, DBM, DBUV, MV, MW,V, W	DBM, W	DBM, W	DBMW, DBM, DBUV, MV, MW, V, W	DBM, DBMW MW, W

Table B-1. Programming Command Guidelines (continued)

Command	:DUN	:AUN	:UNIT	:REF:DUN	REF[:VAL]
MEAS:RF:PTIM:MARK:LEVel:FALL	DB	DB	DB	DB	DB
MEAS:RF:PTIM:MARK:LEVel:MID	DB	DB	DB	DB	DB
MEAS:RF:PTIM:MARK:LEVel:RISE	DB	DB	DB	DB	DB
MEAS:RF:PTIM:MARK:TIME:FALL	S, T, US, MS	S, T	S, T	S, T, US, MS	S, T
MEAS:RF:PTIM:MARK:TIME:MID	S, T, US, MS	S, T	S, T	S, T, US, MS	S, T
MEAS:RF:PTIM:MARK:TIME:RISE	S, T, US, MS	S, T	S, T	S, T, US, MS	S, T
MEAS:RF:TIMING:JITTER	NS	S	S	NS	Real

C

Appendix C

Introduction

These commands appear predominantly in the OSCilloscope, PTIMe and TRIGger subsytems.

:DUNits

The :DUNits command sets the units to be displayed on the screen. Table C-1 gives the valid :DUNits parameters for each command referred to Appendix C.

<command>:DUNits <display_units>

:UNITs

The :UNITs command sets the default units of the <command> to be communicated between the instrument and the controller. Table C-1 gives the valid :UNITs parameters for each command referred to Appendix C.

<command>:UNITs <units>

:INCRement

The :INCRement command sets the value by which the field value increases (using the UP arrow/command) or decreases (using the DOWN arrow/command). Table C-1 gives the valid :INCRement parameters for each command referred to Appendix C.

<command>:INCRement <increment_parameter> or <value>[<units_parameter>]
Where <increment_parameter> = UP or DOWN
Where <value> is the same type as <command>

:INCRement:DUNits

The :INCRement:DUNits command sets the description of the increment value. Table C-1 gives the valid :INCRement:DUNits parameters for each command referred to Appendix C.

<command>:INCRement:DUNits <display_units>

:INCRement:MODE

<command>:INCRement:MODE <scaling_mode>
Where <scaling_mode> = 'LOGarithm' or 'LINear'

:INCRement:MULTiply

The multiply command increase the increment value by a factor of ten.

<command>:INCRement:MULTiply

:INCRement:DIVide

The divide command decreases the increment value by a factor of ten.

<command>:INCRement:DIVide

Programming Command Guidelines

Table C-1. Programming Command Guidelines

Command	:DUN	:UNIT	:INCR:DUN	:INCR[:VALue]
OSC:MARK:POS	DIV	DIV	DIV	DB, DIV
OSC:SCALe:VERT:OFFS	DIV	DIV	DIV	DB, DIV
OSC:TRIG:LEV	DIV	DIV	DIV	DIV
OSC:TRIG:PRET	DIV	DIV	DIV	DB, DIV
OSCe:SCALe:VERT:OFFS	DIV	DIV	DIV	DB, DIV
PTIM:MARK:POS:FALL	DIV	DIV	DIV	DB, DIV
PTIM:MARK:POS:MID	DIV	DIV	DIV	DB, DIV
PTIM:MARK:POS:RISE	DIV	DIV	DIV	DB, DIV
RFAN:AMPL	DBM, DBMW, DBUV, UV, MV, V, MW, W	DBM, W, V,	DB, W	DBM, DBMW, DBUV, UV, MV, V, MW, W
RFAN:FREQ	HZ, KHZ, MHZ, GHZ	HZ	HZ, KHZ, MHZ, GHZ	HZ, KHZ, MHZ, GHZ
RFG:AMPL	DBM, DBMW, DBUV, UV, MV, MW, V, W	DBM, W, V,	DB, W	DB, DBM, DBMW DBUV, UV, MV, MW, V, W
TRIG:DEL	S, T, US, MS	S, T	S, T, US, MS	S, T, US, MS

D

Appendix D

Introduction

These commands appear in the OSCilloscope Subsystem.

:INCRement:MULTiply

The multiply command increase the increment value by a factor of ten.

<command>:INCRement:MULTiply

:INCRement:DIVide

The multiply command decreases the increment value by a factor of ten.

<command>:INCRement:DIVide

E

Appendix E

To enter an integer in hexadecimal, octal, or binary, select the following base:

Using Different Numerical Bases

Hexadecimal

#H0123456
#h0123456

#H or #h is used to denote that a hexadecimal number is entered. The characters that follow are entered as the integer.

Octal

#Q0123456
#q0123456

#Q or #q is used to denote that a octal number is entered. The characters that follow are entered as the integer.

Binary

#B0101010
#b0101010

#B or #b is used to denote that a binary number is entered. The characters that follow are entered as the integer.

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