
Appendix
MS2721.EXE

Anritsu MS2721 Spectrum Analyzer Driver

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Overview

The MS2721.EXE driver is compatible with Anritsu MS2721 spectrum analyzer. Data transfer takes place over Ethernet using TCP/IP and the VXI-11 protocol. The National Instruments version of the VISA driver is used. The instrument command language used is based upon the SCPI Standard. NI Visa driver installation files are included on your Field Test 6 DVD Disk. See the section **Installing NI Visa Driver** for installation details.

The Survey Technologies MS2721.EXE driver uses the above standards as the basis for its interface with the MS2721 spectrum analyzer. The user interface for specifying a drive test procedure is contained in the contents of a user edited text file called <name>.REC. The MS2721.EXE driver uses the contents of a <name>.REC file to define test procedures including the order and structure of specific SCPI commands sent to and received from the analyzer during a test project. To maximize flexibility, all communication with the analyzer is externally defined in the <name>.REC file.

The MS2721 analyzer accepts commands based upon the IEEE Standard Commands for Programmable Instruments or SCPI protocol. SCPI commands for the analyzer are documented in the 2721 Programmers Manual.PDF which is located at C:\STI\Manuals\Drivers in your STI-9400 computer. The programming commands for WiMAX operations, however, have not been included in this Anritsu manual. Programming commands are included in the programming manual for the Anritsu MS271X series of analyzers starting on page 205, which is also included in the C:\STI\Manuals\Drivers directory.

Three types of tests are included by design in the MS2721.EXE driver. The first, called Sweep, is a test method which allows the user to specify start and stop frequencies, average a specified number of sweeps then download the resulting sweep array into the driver where maximum channel values are detected and logged into the measurement database. A second method includes two types of tests. It is called Channel and is a test method in which the spectrum analyzer is set to a sequence of individual channels and directly returns specified parameter(s) for each, which are then logged into the measurement database. Channel tests can be made using the Spectrum Analyzer or WiMAX mode of analyzer operation. Included in the driver installation are <name>.REC setup files for Analyzer Sweep, Analyzer Channel and WiMax Channel types of tests

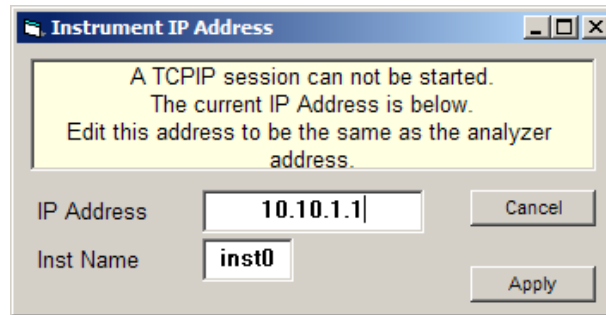
TCP/IP SETUP

The hardware communication interface is a LAN network connection through RJ45 connectors at the laptop and analyzer. If the laptop and analyzer are directly connected, the cable between the laptop and analyzer must be a Crossover type LAN cable. It is assumed that this is the type of connection that will be used.

The IP address of the analyzer and laptop must be initialized for proper communication to be established. When first started the driver will use the IP address

10.10.1.1

as the default for the MS2721 address. If communication fails for any reason the following dialog box will appear.



Enter the IP Address of the MS2721 in the IP Address box. The usual instrument name is inst0 so this box should not need to be changed.

Setting the Analyzer Address

The IP Address of the MS2721 can be set by selecting the following front panel buttons: Shift > System > System Options > Ethernet Configuration. Select Manual under the Type soft key. Use the soft keys to set the 4 IP Address fields and the subnet settings to 255.255.255.0.

When communication is successfully established, the complete VISA compatible address is saved in the <name>.REC file for the current project. An example of a VISA compatible address is:

```
TCPIP::10.10.1.1::inst0::INSTR
```

Where the 4 numerical fields are the actual IP address of the analyzer.

The next time communication is started in this project, this VISA address will be the default address.

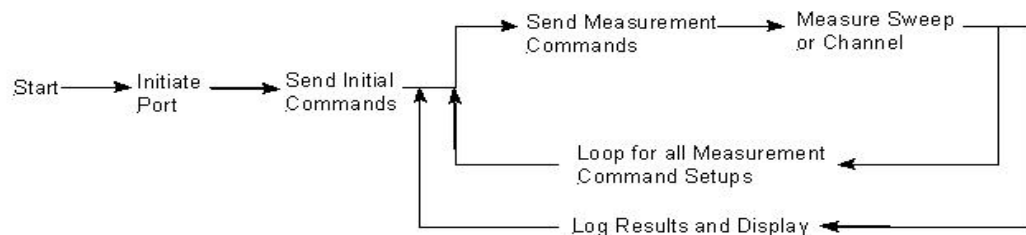
Note: Be sure that the IP Address of the laptop computer has also been set to a valid address and that no firewall including Windows firewall is blocking communication with the selected IP address. When connected directly to the MS2721 you may want to disable firewall programs.

FLOW OF DRIVER OPERATION

From the Main Menu of Field Test 6 select Acquisition to go to the acquisition display. In the acquisition display, the name of the currently active project is shown at the top right corner of the display. This is the <current project> used in this manual. All project related files are located in the Current Project Directory which is C:\STI Projects\<current project>. After the Start Receiver control is

selected, the MS2721.EXE driver proceeds through the following process flow.

1. Settings and parameters are read from the <name>.REC file located in the Current Project Directory.
2. Communication with the analyzer is tested using the default IP Address located in the <name>.REC file in the Current Project Directory.
 - a. If communication with the analyzer fails then the IP Address dialog box is displayed which allows the user to enter the correct IP address of the analyzer.
3. Commands in the [Initial Commands] section of the <name>.REC file are sent to the analyzer.
4. An endless loop is started which is normally exited only by the user selecting the Stop Receiver control in the acquisition mode of the STI software. This measurement loop has the following elements.
 - a. Send commands in the [Measurement Commands 1] section of the <name>.REC file to implement the desired measurement(s)
 - b. Query the MS2721 for the required measurement(s). If the Measurement Type is Sweep then download the sweep from the analyzer and parse the maximum values for frequencies in the [Freq List] section.
 - c. Start at 4.a for the [Measurement Commands 2] section and repeat 4.b.
 - d. Continue with any remaining [Measurement Command n] sections.
 - e. Compile the measurements for the frequencies in the [Freq List] section and send the results to the main Field Test 6 program for logging and Signals display.
5. When the Stop Receiver control is selected, exit the above loop and stop the data acquisition process. Shut down the MS2721.EXE driver program and the analyzer - LAN interface.



SWEEP MEASUREMENT

Sweep measurements may be used effectively when several frequencies are close together and can be viewed on the analyzer screen at one time. A good example of this is illustrated in the sample file, MS2721ab-cell.REC which is a setup to measure all of the amps control channels.

The MS2721 must be in Spectrum Analyzer mode for this type of measurement. Select Shift then Mode, select Spectrum Analyzer from the list then Enter.

For this example, two screens, setup by two sets of measurement commands, are used. First the A System control channels are displayed. The driver then uses two internal commands, FA and FB to set and read the start and stop frequencies so it knows the frequency dimensions of the display. It then sends a TRG command to start the sweep and waits for a Measurement Completion Delay for the sweep averages to complete. The driver then sends the SWP, sweep download command and receives the sweep data array from the analyzer.

Based upon the start and stop dimensions of the display, channel frequencies from the frequency list and channel bucket width the driver computes the peak amplitude for each of the displayed frequencies. The process is then repeated for the set of frequencies in the B System, using the second set of measurement commands.

MS2721ab-cell.REC File

This section contains an explanation of the contents of the MS2721ab-cell.REC file.

NOTE: Throughout the <name>.REC file a leading semicolon ";" in a line will comment out that line.

NOTE: An apostrophe in a line will cause the remainder of the line to be ignored and can be used to add comments after the end of a line.

NOTE: When line numbers are used in a section, no more than 10 numbers can be skipped between lines. For example all lines in the sequence 1, 5, 10, 19 will be read. Line 19 and 20 in the sequence 1,5,19,20 may not be read.

[Compatibility]

File Version=5
Driver=MS2721.EXE
File Version 6=True

The [Compatibility] section contains the lines shown above. These are used by the software to indicate what format is used in the file and with what driver it is to be used. This section should not be modified.

[Global Settings]

The [Global Settings] section contains parameters that are used internally by the driver.

Measurement Type, Sweep or Channel=Sweep

The Measurement Type, Sweep or Channel parameter indicates to the driver which type of measurement is being implemented in the test. It is set to 'Sweep' for this sweep test method.

Bucket Width=20000

The Bucket Width parameter is the frequency width in Hz, that the driver will search for a peak amplitude. Buckets are centered at the frequencies in the frequency list so for a setting of 20000 it will search from 10 kHz below a frequency in the list to 10 kHz above to find the highest amplitude for that frequency. The highest amplitude value within a frequency bucket is logged for that field in the measurement database.

Measurement Completion Time Out=2000

Measurement Completion Time Out is the number of milliseconds to wait for the sweep or sweeps to complete before the sweep data is downloaded from the analyzer to the driver in the laptop. If multiple sweeps are averaged then it can be approximately computed as follows:

Measurement Completion Delay = Sweep Time * number of sweeps.

You should add enough margin on this computation so the download never starts before the sweep averages are completed.

Command Time Out=5000

Command Time Out is used to set the Time Out parameter in the VISA interface. If the analyzer takes longer than this setting to respond then an error will be displayed and the driver will stop.

Inter Command Delay=100

Inter Command Delay is a small delay between Write and Read commands to the analyzer. This helps reduce the possibility of communication errors, particularly during startup.

Timing Beep On=true

Timing Beep On causes the driver to beep each time it sends the sweep download command. By watching the sweep count and listening to the beep you can tell if the download command is being sent after the completion of sweep averages. Measurement Completion Delay is adjusted so the measurement is complete

slightly before the result is requested. Once set, the Timing Beep On parameter can be set to False to silence the beep.

IP Address=TCPIP::10.10.1.1::inst0::INSTR

IP Address is the VISA compatible address that was last successfully used to communicate with the analyzer. It is used for the next communication attempt. If successful the driver will initialize. Otherwise the IP Address window will appear, indicating that a communication error occurred and allowing you to enter the correct IP Address of the analyzer.

[Initial Commands]

The [Initial Commands] section contains SCPI commands that will be sent to the analyzer during startup. These commands are used to initialize the analyzer settings. The format of the lines in this section is:

<line number>=<SCPI Command>

All analyzer settings that do not need to be changed from one scan or frequency to the next should be contained in the [Initial Commands] section. Below is an example of the [Initial Commands] section with comments.

1=:INIT:CONT OFF	'Set to single sweep mode.
2=:SENS:FREQ:START 879.37MHZ	'Set initial Start Frequency
3=:SENS:FREQ:STOP 880.64MHZ	'Set initial Stop Frequency
4=:SENS:BWID:RES 10KHZ	'Set Resolution Bandwidth
5=:SENS:BWID:VID 10KHZ	'Set Video Bandwidth
6=:SENSE:POWER:RF:ATTENUATION 0DB	'Set Attenuator
7=:DISP:WINDOW:TRACE:Y:SCALE:RLEVEL -40DBM	'Set Reference level
8=:SENS:POWER:RF:GAIN:STATE OFF	'Turn of preamp
9=:FORMAT:DATA ASCII	'Set data output format to ASCII
10=:SENS:AVER:COUN 10	'Average 10 Sweeps
11=:SENS:AVER SCALAR	'Set averaging type to scalar.

[Measurement Commands k]

The [Measurement Commands k] sections are sent, in sequence, to the analyzer to setup the frequency display to measure a specific set of frequencies. These sections are cycled through once for each set of measurements then restarted for the next set of measurements.

Commands in the [Measurement Commands] sections are time consuming so should be minimized to only those commands that change parameters required to make the desired measurements.

1=:INIT:CONT OFF	'Turn off sweep
------------------	-----------------

2=:SENS:FREQ:START 879.37MHZ	'Set start frequency
3=:SENS:FREQ:STOP 880.00MHZ	'Set stop frequency

[Internal Commands]

Commands in the [Internal Commands] section are generated by the driver and exposed in this section of the <name>.REC file. They can be changed but should remain unmodified unless required by changes in internal MS2721 product firmware.

FA=:SENS:FREQ:START?	'Reads Start Freq
FB=:SENS:FREQ:STOP?	'Reads Stop Freq
TRG=:INIT:IMMEDIATE	'Starts a Single Measurement
SWP=:TRAC:DATA? 1	'Downloads Trace A

[Freq List]

The [Freq List] section contains the list of frequencies that will be measured. A direct correlation exists between the lines in the frequency list and fields in the measurement database created by the project.

The format of the lines in the frequency list is:

<line number>=<frequency or channel name>,<frequency, MHz>

Channel names are used to name the database fields and files. Therefore, Windows file naming conventions should be followed when creating frequency names.

```

1=ch 313,879.390
2=ch 314,879.420
3=ch 315,879.450
4=ch 316,879.480
5=ch 317,879.510
6=ch 318,879.540
7=ch 319,879.570
...
Lines 8 through 35 here
...
36=ch 348,880.440
37=ch 349,880.470
38=ch 350,880.500
39=ch 351,880.530
40=ch 352,880.560
41=ch 353,880.590
42=ch 354,880.620

```

CHANNEL MEASUREMENT

The Channel method of measurement makes measurements on a single channel utilizing the unique measurement capabilities of the MS2721 analyzer. For example, the MS2721 has the ability to measure integrated power over a specified communication channel. The sample file, MS2721SA_Chan.REC, shows this methodology on a few cellular channels. Measurements of other channel types such as CDMA and 802.11 are covered in the Anritsu MS2721 operators manual.

For this example, the basic channel characteristics are setup with commands in the [Initial Commands] section. Then commands in the [Measurement Commands] section are used to set frequency and read channel power. These commands are repeated for each frequency in the [Freq List] section.

MS2721SA_Chan.REC File

The MS2721SA_Chan.REC file is an example of the setup for making channel type measurements through the MS2721.EXE driver. Following is an explanation of the entries in this file.

NOTE: Through out the <name>.REC file a leading semicolon ";" in a line will comment out that line.

NOTE: An apostrophe in a line will cause the remainder of the line to be ignored and can be used to add comments after the end of a line.

NOTE: When line numbers are used in a section, no more than 10 numbers can be skipped between lines. For example all lines in the sequence 1, 5, 10, 19 will be read. Line 19 and 20 in the sequence 1,5,19,20 may not be read.

[Compatibility]

```
File Version=5  
Driver=MS2721.EXE  
File Version 6=True
```

The [Compatibility] section contains two lines shown below. These lines are used by the software to indicate what format is used in the file and with what driver it is to be used. This section should not be modified.

[Global Settings]

The [Global Settings] section contains parameters used internally by the driver.

```
Measurement Type, Sweep or Channel=Channel
```

The Measurement Type, Sweep or Channel parameter indicates to the driver which type of measurement is being implemented in the test. It is set to 'Channel' for this channel based test method.

Measurement Completion Time Out=10000

Measurement Completion Time Out is not used in the Spectrum Analyzer, Channel type of measurement. See the WiMAX section for its application there.

Command Time Out=7000

Command Time Out is used to set the Time Out parameter in the VISA interface. If the analyzer takes longer than this setting to respond then an error will be displayed and the driver will stop.

Inter Command Delay=100

Inter Command Delay is a small delay between Write and Read commands to the analyzer. This helps reduce the possibility of communication errors, particularly during startup.

Timing Beep On=true

Timing Beep On causes the driver to beep each time it sends a command to read the measurement. Average count and listening to the beep you can tell if the download command is being sent after the completion of measurement. Measurement Completion Delay is adjusted so the measurement is complete slightly before the result is requested. Once set, the Timing Beep On parameter can be set to False to silence the beep.

IP Address=TCPIP::10.10.1.1::inst0::INSTR

IP Address is the VISA compatible address that was last used to communicate with the analyzer. Otherwise the IP Address window will appear, indicating that a communication error occurred and allowing you to enter the correct IP Address of the analyzer. The IP Address may also be changed by editing the IP Address parameter in the <name>.REC file.

[Initial Commands]

The [Initial Commands] section contains SCPI commands that will be sent to the analyzer during startup. These commands are used to initialize the analyzer settings. The format of the lines in this section is:

<line number>=<SCPI Command>

All analyzer settings that do not need to be changed from one scan or frequency to the next should be contained in the [Initial Commands]

section. Below is an example of the [Initial Commands] section with comments.

```

1=:SENS:FREQ:SPAN 90000 'Set the span larger than channel width.
2=:SENS:BWID:RES 3KHZ 'Set resolution bandwidth
3=:SENS:BWID:VID 3KHZ 'Set video bandwidth
4=:SENSE:POWER:RF:ATTENUATION 0DB 'Remove attenuation.
5=:DISP:WINDOW:TRACE:Y:SCALE:RLEVEL -40DBM
    'Set analyzer reference level
6=:SENS:POWER:RF:GAIN:STATE OFF 'Turn off Preamplifier
8=:FORMAT:DATA ASCII 'Set data output format to ASCII
10=:CONFURE:CHPOWER 'Configure channel power measurement
    'Also sets integration BW to span, and
    sweep to single sweep, SO,
12=:SENS:CHP:BAND:INT 30000
    'Set the power integration bandwidth.
14=:SENS:AVER:COUN 5 'Average 5 sweeps

```

[Measurement Commands 1]

For the Channel measurement method, commands in the [Measurement Commands 1] section are repeated for each frequency. The [F] identifier is replaced by the current frequency from the [Freq List] section. When a query command with an [M] identifier is encountered the driver accepts the queried value as the measurement for the current frequency.

Then the current frequency is incremented down the [Freq List] section by one and the measurement is taken again. When all frequencies in the [Freq List] section have been measured, the results are sent to the main Field Test 6 program for logging and display.

```

1=:SENS:FREQ:CENT [F]
    'Set the center frequency
2=:INIT:IMMEDIATE
    'Starts a measurement.
3=Wait 2000
    'Causes the driver to wait for 2 seconds while the
    measurement is completed.
3=:FETCH:CHPOWER? [M]
    'Fetch the completed Channel Power measurement and assign
    the value as the measurement for the current frequency.

```

[Freq List]

The [Freq List] section contains the list of frequencies that will be measured. A direct correlation exists between the lines in the frequency list and fields in the measurement database created by the project.

The format of the lines in the frequency list is:

<line number>=<frequency or channel name>,<frequency in MHz>

Channel names are used to name the database fields and files.
Therefore, Windows file naming conventions should be followed
when creating frequency names.

1=ch 344,880.320

2=ch 345,880.350

3=ch 346,880.380

4=ch 347,880.410

5=ch 348,880.440

WiMAX Channel Measurement

The WiMAX Channel method of measurement makes measurements on a WiMAX channels. The analyzer must have the Fixed WiMAX signal analyzer option installed to make these measurements. To switch to the WiMAX Mode, select Shift then Mode and select the Fixed WiMAX Signal Analyzer option then select Enter. The MS2721 will reset to the Fixed WiMAX Signal Analyzer mode.

The sample file, MS2721WiMAX_Chan.REC, shows this methodology on a few WiMAX channels.

The basic WiMAX channel measurement characteristics are setup with commands in the [Initial Commands] section. Then commands in the [Measurement Commands] section are used to set frequency and read channel power. These commands are repeated for each frequency in the [Freq List] section.

MS2721WiMAX_Chan.REC File

The MS2721WiMAX_Chan.REC file is an example of the setup for making WiMAX power measurements through the MS2721.EXE driver. Following is an explanation of the entries in this file.

NOTE: Through out the <name>.REC file a leading semicolon ";" in a line will comment out that line.

NOTE: An apostrophe in a line will cause the remainder of the line to be ignored and can be used to add comments after the end of a line.

NOTE: When line numbers are used in a section, no more than 10 numbers can be skipped between lines. For example all lines in the sequence 1, 5, 10, 19 will be read. Line 19 and 20 in the sequence 1,5,19,20 may not be read.

[Compatibility]

File Version=5
Driver=MS2721.EXE
File Version 6=True

The [Compatibility] section contains two lines shown below. These lines are used by the software to indicate what format is used in the file and with what driver it is to be used. This section should not be modified.

[Global Settings]

The [Global Settings] section contains parameters used internally by the driver.

Measurement Type, Sweep or Channel=Channel

For WiMAX measurements the Measurement Type, Sweep or Channel parameter must be set to Channel.

Measurement Completion Time Out=10000

In the WiMAX type measurement the Measurement Completion Time Out sets the number of milliseconds available for the completion of a WiMAX channel measurement. If the measurement is not complete in Measurement Completion Time Out milliseconds an error will be generated and the driver will stop.

Command Time Out=7000

Command Time Out is used to set the Time Out parameter in the VISA interface. If the analyzer takes longer than this setting to respond then an error will be displayed and the driver will stop.

Inter Command Delay=300

Inter Command Delay is a small delay between Write and Read commands to the analyzer. This helps reduce the possibility of communication errors, particularly during startup.

In WiMAX mode it also determines the rate the driver polls the MS2721 to see if the WiMAX channel measurement is complete.

Timing Beep On=true

Timing Beep On causes the driver to beep each time it sends a command to fetch the completed measurement. By observing the Average Count and listening to the beep you can tell if the download command is being sent after the completion of measurement.

If the measurement is being requested early then the Inter Command Delay may need to be increased slightly.

IP Address=TCPIP::10.10.1.1::inst0::INSTR

IP Address is the VISA compatible address that was last used to communicate with the analyzer. Otherwise the IP Address window will appear, indicating that a communication error occurred and allowing you to enter the correct IP Address of the analyzer. The IP Address may also be changed by editing the IP Address parameter in the <name>.REC file.

[Initial Commands]

The [Initial Commands] section contains SCPI commands that will be sent to the analyzer during startup. These commands are used to initialize the analyzer settings. The format of the lines in this section is:

<line number>=<SCPI Command>

All analyzer settings that do not need to be changed from one scan or frequency to the next should be contained in the [Initial Commands] section. Below is an example of the [Initial Commands] section with comments.

```

1=:SENSE:FREQUENCY:SIGSTANDARD 5      '(See Note Below)
2=:SENSE:BANDWIDTH:RESOLUTION 2      '(See Note Below)
3=:SENSE:CPRATIO 2      'Cyclic Prefix Ratio (See Note Below)
4=:SENSE:DLFLENGTH 5      'Download Frame Length, ms
5=:SENSE:POWER:RF:RANGE:AUTO ON
6=:FORMAT:DATA ASCII
7=:CONFIGURE:RF ACPR      'Initialize ACPR Measurement
8=:INITIATE:CONTINUOUS:OFF      'Must be in Single Sweep Mode
9=:WAIT 1000      'Wait for settings to complete
    
```

Signal Standard List

The list of Signal Standards are accessed in the MS2721 when in WiMAX mode by selecting Freq then Signal Standard. The index of the WiMAX standard in the list is the parameter for the SIGSTANDARD setting.

Bandwidth Resolution List

The list of Bandwidth Resolutions are accessed in the MS2721 by selecting Setup then BW. The index of the setting in the list is the parameter for the Bandwidth Resolution setting.

CPRatio List

The Cyclic Prefix Ratio (CPRatio) settings are accessed in the MS2721 by selecting Setup then CP Ratio. The index of the setting in the list is the parameter for the CPRatio setting.

[Measurement Commands 1]

For the WiMAX channel measurement method, commands in the [Measurement Commands 1] section are repeated for each frequency or channel number. If the channel frequency is to be used the command:

```
:SENSE:FREQUENCY:CENTER [F]
```

is used. The [F] identifier is replaced by the current frequency from the [Freq List] section.

If the channel number is to be used the command:

```
:SENSE:FREQUENCY:SIGSTANDARD:CHANNEL [C]
```

is used. The [C] identifier is replaced by the current channel number from the [Freq List] section.

Notice in the MS2721WiMAX_Chan.REC file there is a [Freq List] section for setting the channel number and an example [Freq List] section for setting the channel frequency. The "Block" word is added to the section heading to comment out that section.

The command:

```
:STATUS:COMMAND? [256]
```

query is used to check for the completion of the channel measurement. The return value, 256, indicates the measurement is complete.

The command:

```
:FETCH:RF:ACPR? [M1]
```

query is used to fetch the first parameter from the comma delimited string of responses from the ACPR query and use it for the current channel measurement. Other parameters from the ACPR query may also be included in the measurement as long as there is a position in the [Freq List] section, and therefore a field in the measurement database, to accept the measurement value.

Each [Mn] encountered increments down the [Freq List] by one. When all items in the [Freq List] section have been measured, the results are sent to the main Field Test 6 program for logging and display. Below is an example:

[Measurement Commands 1]

```
1=:SENS:FREQUENCY:SIGSTANDARD:CHANNEL [C]  
;Sets the current channel.
```

```
2=:INIT:IMMEDIATE  
;Starts the measurement.
```

```
3=:STATUS:OPERATION? [256]  
'Checks for measurement completion.
```

```
3=:FETCH:RF:ACPR? [M1]  
'Fetch the completed Adjacent Channel Power Ratio  
measurements and assign the first value in the comma  
separated string as the measurement for the current frequency.
```

[Freq List]

The [Freq List] section contains a list of frequencies or, alternatively, channels that will be measured. A direct correlation exists between the lines in the frequency list and fields in the measurement database created by the project.

The format of the lines in the frequency list is:

```
<line number>=<frequency or channel name>,<frequency in MHz>
```

For example:

1=ch 5,2305.750
2=ch 10,2307.000
3=ch 15,2308.250
4=ch 20,2309.500
5=ch 25,2310.750

OR:

<line number>=<channel name>,<channel number>

For example:

1=ch 5,5
2=ch 10,10
3=ch 15,15
4=ch 20,20
5=ch 25,25

Channel names are used to name the database fields and files. Therefore, Windows file naming conventions should be followed when creating frequency names.

Installing NI Visa Driver

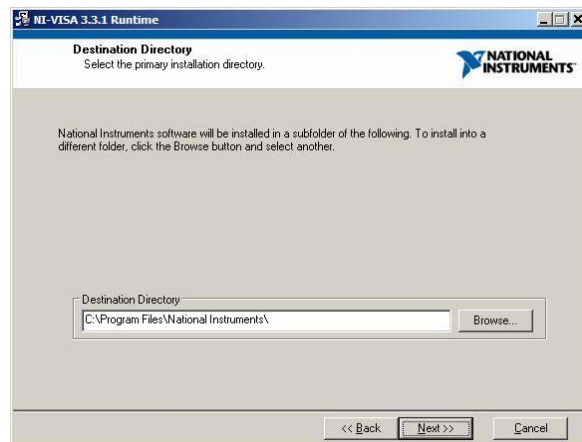
The Anritsu MS2721 requires a VISA driver to enable communication through its network interface. Installation files for the NI Visa driver, are included on the Field Test 6 DVD Disk. To install Visa drivers, use Windows Explorer to open the Field Test 6 DVD and execute:

DVD:\NI Visa Runtime\Setup.EXE

The NI VISA 3.3.1 Runtime window is shown below. Later versions of NI VISA installation will differ slightly from that shown below.

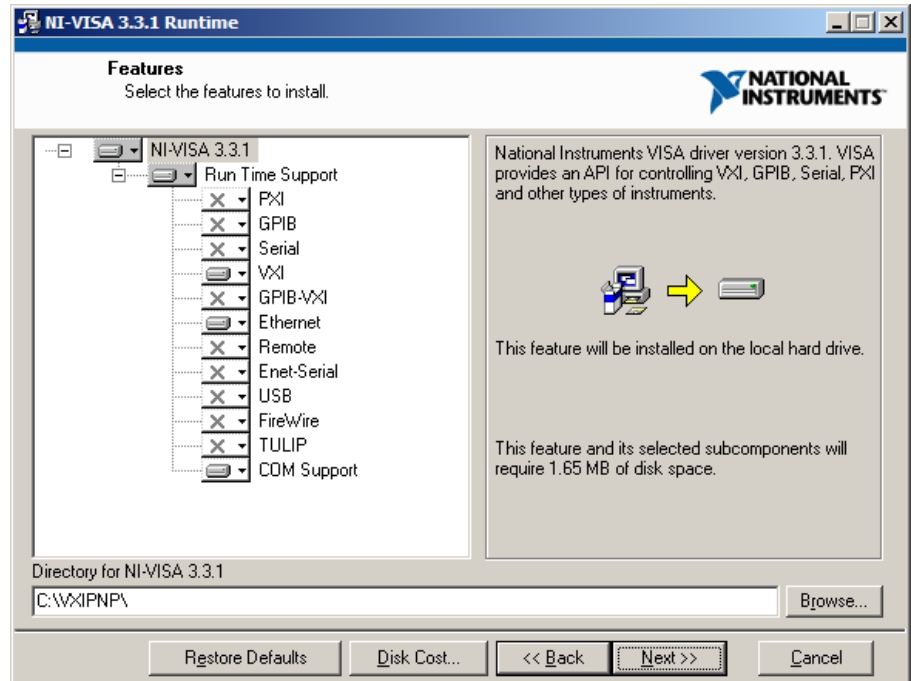


Click on Next to view the following installation path window.



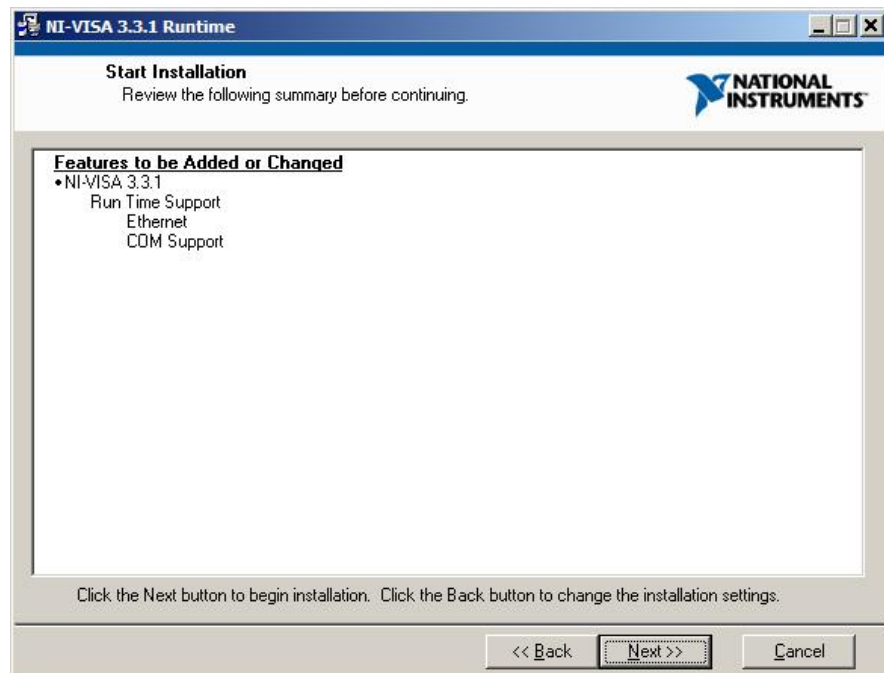
Acknowledge the default installation path by selecting Next.

The window below showing the NI Visa components to install will be displayed. The MS2721 only needs three of these components; VXI, Ethernet and COM Support. To minimize installation clutter, install only these modules. Click each of the other modules listed and select the 'X' option so they will not be installed.



The window should look like the window above when properly setup.

Then click the Next button.

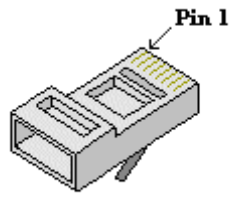


The confirmation page will be displayed. It should show that Visa Runtime Support with VXI, Ethernet and Com Support modules will be installed. Then click Next and follow the instructions for the remaining portion of the installation.

When the installation is finished Visa support for the MS2721 will be installed.

Analyzer LAN Cable

The LAN cable for the analyzer, when directly connected to an STI-9400 laptop must be a LAN Crossover cable. The cable included with the MS2721.EXE driver follows the TIA/EIA 568B crossed wiring standard shown in the diagram below.



RJ-45 Plug

TIA/EIA 568B Crossed Wiring

