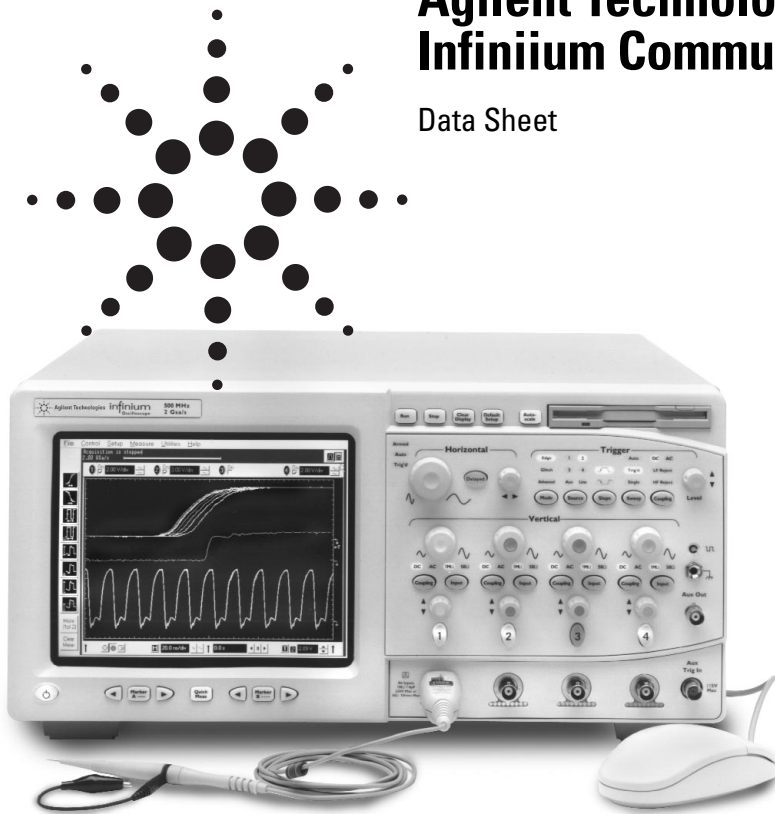# Agilent Technologies
Infiniium Communication Mask Test Kit

Data Sheet

Perform compliance testing to ANSI, ITU-T and IEEE standards with Infiniium's Communication Mask Template library and electrical communication adapters.

Option 100 Features:

- Over 20 industry standard ANSI T1.102, ITU-T G.703 and IEEE 802.3 communication signal mask templates

- Mask testing for positive and negative pulses

- Electrical communication adapters optimized for use with Agilent Infiniium oscilloscopes

- FCC Part 68 Option B and C masks for "line build-out" testing of DS1/T1 signals.

- Automatic "isolated ones" triggering for all pulse mask templates

- One-button alignment for best fit of mask templates to test waveforms, virtually eliminating manual oscilloscope adjustments

- Automatic pass/fail comparison of mask templates to corresponding input waveforms

- Failure highlighting for fast identification of mask failure areas

- Flagging of out-of-specification waveform amplitudes for ANSI T1.102 masks

- Mask failure waveform characterization with features such as color-graded persistence, histograms, drag and drop measurements and eye diagram measurements

- Ability to load custom masks from ASCII text files

- Screen annotation for complete documentation of measurements to electronic files or printers

- Familiar Windows graphical user interface

- Built-in LAN interface for connecting your scope to PCs, network printers and other Infiniium oscilloscopes

- GPIB programmability of mask test features for automated test applications

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Take the frustration out of communications testing

Now there's an easier way to prove your products conform to industry standards. Use an Infiniium oscilloscope with the Communication Mask Test Option to get your job done more quickly. Infiniium's familiar Windows interface makes it easy for you to access the masks you need and configure your tests. Plus you'll find a variety of special mask test features that save you time and trouble. The Communication Mask Test Kit comes complete with a library of mask templates and a set of electrical communication adapters to assure convenient, reliable and accurate connections to your device under test.

Communication mask test

The Communication Mask Template Library comes on a single 3.5" floppy disk for easy installation onto Infiniium's hard disk drive. Configuring a mask test is fast and easy, too. The mask test dialog box lets you select the oscilloscope channel and display masks contained in the mask template library. Once your test is configured, you can dismiss the dialog box to maximize waveform viewing area and control your test directly using popup menus. You'll see an on-screen indication of the current mask and its data rate.

Once you've chosen the appropriate mask, simply click on the Align button to automatically perform a fast, exhaustive search for the optimum fit of the mask to the test signal. This virtually eliminates the need for manual adjustments to your oscilloscope. This is an especially valuable feature for production test applications.

You can perform a "compare" test on positive or negative pulses to check the waveform's compliance with the mask standard. You can run the test until a single failure has occurred, a given number of waveforms have been captured, or a specific period of time has elapsed.

Communication Mask Template Library

Standard	Mask Template	Data Rate (Mb/s)	Standard	Mask Template	Data Rate (Mb/s)
ANSI T1.102	DS1	1.544	**ITU-T G.703**	DS1	1.544
	FCC Part 68.308 Options B,C	1.544		E1	2.048
	DS1A	2.048		DS2	6.312
	DS1C	3.152		E2	8.448
	DS2	6.312		E3	34.368
	DS3	44.736		DS3	44.736
	STS1 (pulse)	51.840		E4	139.264
	STS1 (eye)	51.840		STM1E	155.520
	DS4NA (eye)	139.264			
	STS3 (eye)	155.520	**IEEE 802.3**	10BASE-T	10

Use the mouse or Infiniium's keyboard to add labels or notes to your screen images, then save them to the floppy or hard disk. The built-in LAN interface makes it easy to transfer these images to network computers so you can share or document your work. You can also print the waveform to local or network printers.

"Isolated ones" triggering

It is necessary to isolate a pulse for mask testing to eliminate intersymbol interference caused by adjacent pulses. Infiniium's Communication Mask Test Option makes this easy through the use of "isolated ones" triggering for pulse mask templates, eliminating the need for sophisticated pattern generators. When you load in a pulse mask, Infiniium automatically sets up the trigger to capture an "isolated one" pattern as defined by the particular ANSI or ITU standard.

Connecting to your Device under Test

Product compliance testing requires proper connection to your communications device. Included in the Option 100 kit is a set of electrical termination adapters and adapter cables to assure convenient, reliable and accurate connections to your device under test. The kit also includes system performance accessories and the Mask Template Library software – all packaged in a protective, hard-shell case.

E2621A 100/110/120-ohm termination adapter

The E2621A ac-coupled, balanced adapter allows connection to differential communications signals by terminating the signal into 100, 110 or 120 ohms. It also adapts various connector styles (i.e., bantam, RJ48C and Siemens) to the oscilloscope's 50-ohm BNC input. You can select the termination impedance using the built-in, three-way switch. The AutoProbe interface allows the Infiniium oscilloscope to recognize the E2621A and read the termination switch setting. Furthermore, Infiniium will flag you when the switch setting differs from the standard's required termination impedance.

Characteristics

The E2621A complies with the following ANSI T1.102 and ITU-T G.703 Standards:

DS1	(1.544 Mb/s)
DS1A	(2.048 Mb/s)
DS1C	(3.152 Mb/s)
DS2	(6.312 Mb/s)
E1	(2.048 Mb/s)

Bandwidth (-3 dB):	<10 kHz to >100 MHz
Rise Time:	<3.5 ns
Attenuation:	5X (-14 dB) ± 3% (50 kHz to 30 MHz)

E2622A 75-ohm termination adapter

The E2622A dc-coupled, unbalanced adapter allows you to connect communications signals such as DS3 and E3 to the oscilloscope's 50-ohm BNC input. The AutoProbe interface allows Infiniium to recognize the E2622A and automatically configure itself.

Characteristics

The E2622A complies with the following ANSI T1.102 and ITU-T G.703 Standards:

DS3	(44.736 Mb/s)
DS4NA	(139.264 Mb/s)
STS1	(51.840 Mb/s)
STS3	(155.520 Mb/s)
STM1E	(155.520 Mb/s)
E1	(2.048 Mb/s)
E2	(8.448 Mb/s)
E3	(34.368 Mb/s)
E4	(139.264 Mb/s)

Bandwidth (-3 dB):	>1 GHz*
Rise Time:	<350 ps
Attenuation:	5X (-14 dB) ± 1.5%

* Full bandwidth only achievable with 54845A 1.5 GHz oscilloscope.

Model No.	No. of Ch.	Bandwidth	Sample Rate	Memory Depth
54810A	2	500 MHz	1 GSa/s	32k
54815A	4	500 MHz	1 GSa/s	32k
54820A	2	500 MHz	2 GSa/s	32k
54825A	4	500 MHz	2 GSa/s	32k
54835A 4 ch. 2 ch.	4	1 GHz	2 GSa/s 4GSa/s	32k 64k
54845A 4 ch. 2 ch.	4	1.5 GHz	4 GSa/s 8 GSa/s	32k 64k

1. With the purchase of a new Infiniium oscilloscope:

Option 100 Communication
Mask Test Kit includes:
E2626A Mask Template Library floppy disk (on 1.44MB 3.5-inch floppy disk)
E2621A 100/110/120-ohm balanced termination adapter with bantam (f) connector
E2622A 75-ohm unbalanced termination adapter with BNC (f) connector
E2623A Bantam (m) to Siemens (f) adapter cable; for connection to E2621A adapter when a Siemens (f) connection is needed
E2624A Dual-bantam (m) to RJ48C (m) adapter cable; for connection of either transmit or receive T1 signals to E2621A adapter
E2627A RJ48C (f) to RJ48C (f) adapter/coupler
E2628A Bantam (m) to BNC (f); for system verification of E2621A adapter and the Infiniium oscilloscope
E2629A BNC (m) to BNC (f) 50-to-75 ohm adapter; for system verification of E2622A adapter and the Infiniium oscilloscope
8120-1838 BNC (m) to BNC (m) cable - 30 cm long
Hard-shell case for storage of all kit accessories

2. For existing Infiniium oscilloscope customers:

E2625A Same kit as above; requires version 3.0 of the Infiniium software

To receive your free Infiniium software update to version 3.0, go to our Infiniium web site: **www.agilent.com/find/Infiniium1**

Individual items included in Option 100 (E2625A) kit:

E2626A Mask Template Library floppy disk (requires version 3.0 software)

E2621A 100/110/120-ohm balanced termination adapter with bantam (f) connector

E2622A 75 ohm unbalanced termination adapter with BNC (f) connector

E2623A Bantam (m) to Siemens (f) adapter cable - 30 cm long

E2624A Dual-bantam (m) to RJ48C (m) adapter cable - 35 cm long

E2627A RJ48C (f) to RJ48C (f) adapter/coupler

E2628A Bantam (m) to BNC (f) adapter; for system verification/calibration of the E2621A adapter and the Infiniium oscilloscope

E2629A BNC (m) to BNC (f) 50-to-75-ohm adapter; for system verification of the E2622A adapter and the Infiniium oscilloscope

8120-1838 BNC (m) to BNC (m) cable - 30 cm long

Recommended Accessories

E2630A Bantam (m) to bantam (m) patch cable - 180 cm long

E2632A Siemens (m) to Siemens (m) patch cable - 1 m long

For more information about Agilent Technologies test and measurement products, applications, services, and for a current sales office listing, visit our web site:
www.agilent.com/find/infiniium1
You can also contact one of the following centers and ask for a test and measurement sales representative.

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P.O. Box 4026
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(tel) 1 800 452 4844

Canada:
Agilent Technologies Canada Inc.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
(tel) 1 877 894 4414

Europe:
Agilent Technologies
Test & Measurement
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P.O. Box 999
1180 AZ Amstelveen
The Netherlands
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