

DCA Probes & Accessories

Technical Overview

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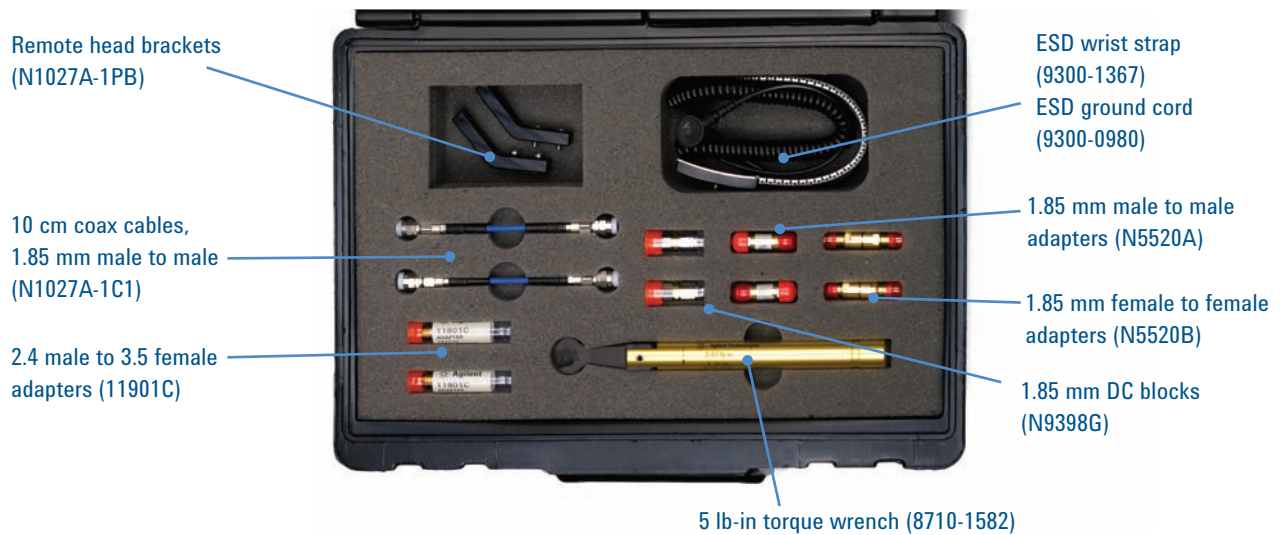


Agilent Technologies

N1027A-45A Accessory Kit for Remote Head Modules

Kit consists of:

Quantity	Part number	Description
1	8710-1582	0.57 Nm (5 lb-in) torque wrench
2	N1027A-1PB	Remote head brackets
2	11901C	2.4 mm male to 3.5 mm female adapter
2	N9398G	1.85 mm DC block
2	N5520A	1.85 mm male to male adapter
2	N5520B	1.85 mm female to female adapter
2	N1027A-1C1	1.85 mm cable
1	9300-1367	ESD wrist strap
1	9300-0980	ESD ground cord
1	N1027A-1AC	Accessory case



Clock Recovery Phase Matching Cable Kits

N1027A-S32 kit

- 1x N1075-60013 9/125 um single-mode fiber, FC/PC, 5.3 m
- 2x N1075-60017 2.92 mm male-to-male coaxial cable, 1m¹

N1027A-M14

- 1x N1075-60015 9/125 um single-mode fiber, FC/PC 7.1 m
- 1x N1075-60016 62.5/125 um multimode fiber, FC/PC, 6.0 m
- 2x N1075-60017 2.92 mm male-to-male coaxial cable, 1m¹



1. To connect the N4877A recovered clock output to the 86100C/D trigger input and to connect the N4877A auxiliary output with an optional 86107A precision timebase.

Adapters & Connector Savers

Description below specifies gender of adapter

N5520A	1.85 mm male to 1.85 mm male adapter/connector saver
N5520B	1.85 mm female to 1.85 mm female adapter/connector saver
N5520C	1.85 mm female to 1.85 mm male connector saver
11900A	2.4 mm male to 2.4 mm male adapter/connector saver
11900B	2.4 mm female to 2.4 mm female adapter/connector saver
11900C	2.4 mm female to 2.4 mm male connector saver
11901A	2.4 mm male to 3.5 mm male adapter
11901B	2.4 mm female to 3.5 mm female adapter
11901C	2.4 mm male to 3.5 mm female adapter
11901D	2.4 mm female to 3.5 mm male adapter
85130-60010	2.4 mm female to 3.5 mm male NMD bulkhead adapter
83059A	3.5 mm male to 3.5 mm male adapter/connector saver
83059B	3.5 mm female to 3.5 mm female adapter/connector saver
83059C	3.5 mm female to 3.5 mm male connector saver
5061-5311	3.5 mm female to 3.5 mm female adapter/connector saver



11900B



85130-60010
2.4 F -3.5 M



5061-5311

2.4 mm connectors are mechanically compatible with 1.85 mm.
2.92 mm connectors are mechanically compatible with 3.5 mm and SMA connectors.

Examples:

Use two 11901Cs to connect SMA cables to an N1045A-02F or 86108B-HBW or N4903B.
Use 5061-5311 as a connector saver for the 86112A, 54754A or 86105X electrical inputs.

DC Blocks, Phase Trimmers, Cables, Caps

N9398G	1.85 mm male-to-female DC block 16V 700 kHz - 67 GHz
N9398F	2.4 mm male-to-female DC block 16V 50 kHz- 50 GHz
N9398C	3.5 mm male-to-female DC block 16V 50 kHz - 26.5 GHz
N1027A-PT2	2.4 mm male-to-female phase trimmer
N1027A-PT3	3.5 mm male-to-female phase trimmer
N1027A-1C1	1.85 mm coaxial male-to-male cable, 67 GHz, 10 cm
N4910A	2.4 mm male-to-male matched coaxial cable pair, 61 cm
N4871A	3.5 mm male-to-male matched coaxial cable pair, 91 cm
N1027A-1CF	Shipping cap to protect 1.85/2.4 mm female inputs
N1027A-1CM	Shipping cap to protect 1.85/2.4 mm male inputs



N9398F



N4910A

2.4 mm connectors are mechanically compatible with 1.85 mm.
2.92 mm connectors are mechanically compatible with 3.5 mm and SMA connectors.

Examples:

The N1045A-04F requires four N1027A-1CF caps.



N1027A-PT2

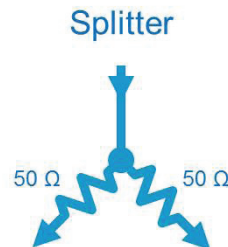
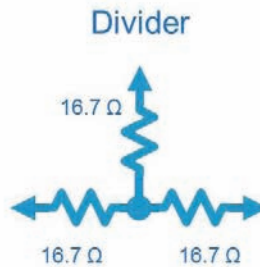
Attenuators, Terminations

8493C-003	3.5 mm 3 dB attenuator
8493C-006	3.5 mm 6 dB attenuator
8493C-010	3.5 mm 10 dB attenuator
8493C-020	3.5 mm 20 dB attenuator
8490D-003	2.4 mm 3 dB attenuator
8490D-006	2.4 mm 6 dB attenuator
8490D-010	2.4 mm 10 dB attenuator
8490D-020	2.4 mm 20 dB attenuator
909D-011	3.5 mm female 50 Ohm load
909D-301	3.5 mm male 50 Ohm load
85138A	2.4 mm male 50 Ohm load
85138B	2.4 mm female 50 Ohm load
85140A	2.4 mm male short
85140B	2.4 mm female short
85141A	2.4 mm male open
85141B	2.4 mm female open



Power Dividers, Splitters

11636B	3.5 mm power divider, DC to 26.5 GHz
11636C	2.4 mm power divider, DC to 50 GHz
11667B	3.5 mm power splitter, DC to 26.5 GHz
11667C	2.4 mm power splitter, DC to 50 GHz



Storage

See also www.agilent.com/find/parts

N1000-40008 Front cover for 86100D¹



N1000-40008

N1027A-1AC Accessory case²

N1027A-1MC Module storage case for N1045A module

N1027A-1CL Clip for N1045A cable management

N1027A-2CL Clip for two N1045A remote heads



N1027A-1CL



N1027A-2CL

86101-60017 Module filler panel for 86100A/B/C/D (¼ bay width)³

86101-60016 Module filler panel for 86100A/B/C/D (½ bay width)^{3,4}



86101-60017

86101-60016

1. Does not fit 86100A/B/C mainframes.

2. Empty N1027A-45A case (see photo on page 2).

3. Use filler panels to ensure proper airflow through the inside of modules. Otherwise the movement of air may be cut short, and components may overheat in hot environments.

4. While supplies last. Otherwise use two 86101-60017.

ESD Protection

N9355CK01 3.5 mm DC coupled limiter



9300-1308 ESD heel strap

9300-1367 ESD wrist strap

9300-0980 ESD ground cord

9300-1484 ESD desk mat



Rackmount Kits, Tools

1CM030A Rackmount kit for 86100A/B/C

1CP018A Rackmount kit with handles for 86100A/B/C

1CM015A Rackmount kit for 86100D

1CP020A Rackmount kit with handles for 86100D



8710-1582 0.57 nm (5 lbs-in) torque wrench¹

8710-1765 0.9 nm (8 lbs-in) torque wrench²

8710-1764 0.9 nm (8 lbs-in) torque wrench³



Bulkhead
Connector saver



1. Recommended for 1.85/2.4 mm DCA connectors (e.g. N1045A, 86116C, 86118A).

2. Recommended for 3.5 mm DCA connectors (e.g. 54754A, 86105x, 86112A).

3. Recommended for DCA bulkheads (e.g. 86100x trigger input, 54754A, 86105x, 86112A).

InfiniiMax III - 30 GHz Probing System Overview

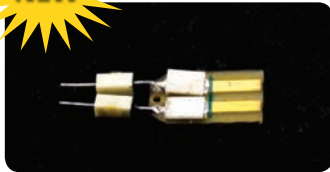
Probe amps

- 16 GHz - 30 GHz (Highest bandwidth in the market)
- Industry's highest fidelity and accuracy
- Bandwidth upgradable



*InfiniiMax III probe amps
(N2800A-03A)
16 GHz, 20 GHz,
25 GHz, 30 GHz*

Probe heads and accessories



*N2838A
25 GHz PCB ZIF probe tips*



*N5439A
ZIF probe head
N5440A 28 GHz 450 ohm ceramic tips
N5447A 28 GHz 200 ohm ceramic tips*



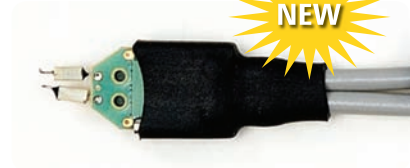
*N5445A
30 GHz browser*



*N5444A
2.92 mm /3.5 mm/SMA
28 GHz probe adapter*



*N5441A
16 GHz solder-in probe head*



*N2836A
26 GHz solder-in probe head*

Probe adapters



*N5477A
Sampling oscilloscope adapter*



*N5449A
Hi impedance probe adapter*



*N5442A
Precision BNC 50 ohm adapter*



*N5443A
Performance
verification &
deskew fixture*

Using InfiniiMax III Probe with DCAs

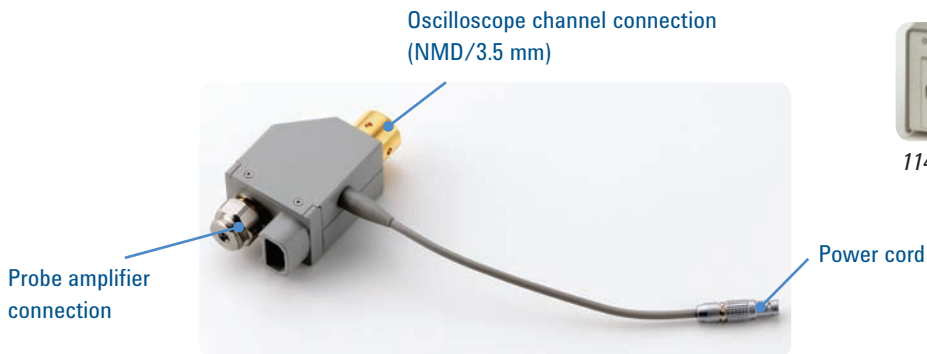
- For directly connecting to any DCA module with a 3.5 mm bulkhead connector: [N5477A](#) sampling oscilloscope adapter to InfiniiMax III probes.
- For directly connecting to any DCA module with a 2.4 mm bulkhead connector: [N1022B](#) plus [85130-60010](#) 2.4 mm (f) to 3.5 mm (m) NMD adapter.
- For modules that do not have built-in probe power: add an [1143A](#) probe power supply with Option 001.
- [N5477A](#) plus InfiniiMax III [N2803A](#) probe provide 30 GHz bandwidth.



85130-60010
2.4 F-3.5 M



1143A



N5477A sample oscilloscope adapter for InfiniiMax III

Using InfiniiMax I/II Probe with DCAs

Required accessories and instruments:

- For directly connecting to any DCA module with a 3.5 mm bulkhead connector: [N1022B](#).
- For directly connecting to any DCA module with a 2.4 mm bulkhead connector: [N1022B](#) plus [85130-60010](#).
- For modules that do not have built-in probe power: add an [1143A](#) probe power supply with Option 001.
- [E2655C](#) performance verification and deskew fixture for probe calibration and performance verification.

Typical 1143A Configuration for 86117A

Model	Description	Quantity
1143A	7 GHz probe amp	1
E2669A	Differential connectivity kit	1
N1022B	Probe adapter	1
85130-60010	2.4 to 3.5 mm adapter	1
1143A	Probe power supply	1
Option 001	5-foot power extension cable	1
E2665C	Calibration/deskew fixture	1

N1021B 18 GHz Differential TDR/TDT Probe Kit

Qty.	Description	Replacement
1	Differential TDR probe	—
1	Pair of matched cables (1 m)	N1021-60003
2	SMA short (m)	0960-0055
2	SMA load 50 Ohm (m)	1810-0118
2	SMA adapter (f-f)	1250-1666
1	Adapter to positioners (includes two 2.5 mm screws and one Allen wrench)	N1021-60008
1	ESD wrist strap	9300-1367
1	ESD wrist strap ground cord	9300-0980
1	ESD warning label stickers	—
1	User's guide (either printed or on CD)	—
1	Box with foam insert	—



Optical Interfaces

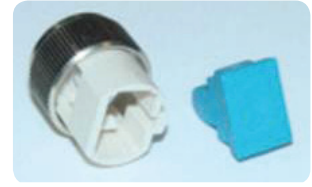
- DCA modules (8610XX, 8611XX, 83496X, N107XX)
 - Have removable connector interfaces
 - Ship with **81000FI FC/PC pre-installed**
 - Compatible with 81000xl interfaces shown here (sold separately)
- Internal fiber tip is mini HMS-10 ferrule
 - Requires patchcords with straight physical contact (DIN , E2000, FC/PC, LC, MU, SC, or ST connector)
 - Easy to clean – just unscrew the connector interface



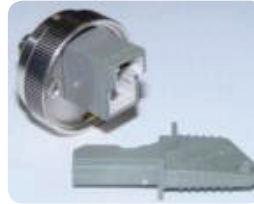
81000FI – FC/PC
(Ships standard with all optical inputs on modules for the DCA family)



81000LI – LC



81000KI – SC



81000HI – E2000



81000MI – MU



81000SI – DIN4108/47256

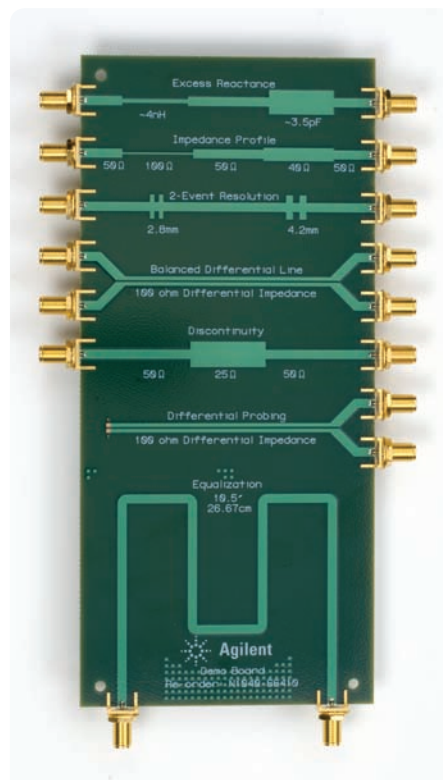


81000VI – ST

Training Tools and Devices

Available from www.agilent.com/find/parts

N1040-66410 TDR/TDT, equalization and de-embedding demo board



Appendix: DCA Input Connectors

Product	Probe power	3.5 mm	2.4 mm	1.85 mm	Optical	Comment
54754A	Yes	f/f CS				
83496B	No	f/f CS			FC/PC nut	
86100C/D	No	f/f CS				Trigger input
86105C	No	f/f CS			FC/PC nut	
86105D	No	f/f CS			FC/PC nut	
86107A	No	f/f CS	f/f CS			2.4 mm only on 40 GHz input
86108A	Yes	f/f CS				
86108B	Yes	f/f CS	f/f CS			2.4 mm only on 50 GHz input
86112A	Yes	f/f CS				
86115D	No				FC/PC nut	
86116C	No			m fixed	FC/PC nut	
86117A	No		f/f CS			
86118A	No			f fixed		
N1045A-xxF	No			f fixed		
N1045A-xxM	No			m fixed		

f/f CS Female/female connector saver (bulkhead is male, customer can remove connector saver)

m/m CS Male/male connector saver (bulkhead is female, customer can remove connector saver)

f fixed Female fixed interface

m fixed Male fixed interface

FC/PC nut 86100FI straight FC/PC interface (customer can exchange it with interfaces, see Optical Interfaces on page 9)

Appendix: RF/Microwave Connectors

3.5 mm connector

The 3.5 mm connector was primarily developed at Hewlett Packard – now Agilent Technologies, with early manufacturing at Amphenol. Its design strategy focused on highly-rugged physical interfaces that would mate with popular SMA dimensions, allowing thousands of repeatable connections. It is mode-free to 34 GHz.

2.92 mm connector

The 2.92 mm connector mates with SMA and 3.5 mm connectors and offers mode-free performance to 40 GHz.

2.4 mm connector

The 2.4 mm connector was developed by Hewlett Packard, Amphenol, and M/A-COM for use to 50 GHz. This design eliminates the fragility of the SMA and 2.92 mm connectors by increasing the outer wall thickness and strengthening the female fingers. It can mate with SMA, 3.5 mm and 2.92 mm, with the use of precision adapters. The 2.4 mm product is offered in three quality grades: general purpose, instrument, and metrology. General-purpose grade is intended for economy use on components, cables, and microstrip where limited connections and low repeatability is acceptable. Instrument-grade is best suited for measurement applications where repeatability and long life are primary considerations. Metrology-grade is best suited for calibration applications where the highest performance and repeatability are required.

1.85 mm connector

The 1.85 mm connector was developed in the mid-1980s by Hewlett Packard (now Agilent Technologies) for mode-free performance to 65 GHz. Hewlett Packard offered their design as public domain in 1988 to encourage standardization of connector types; a few devices are available from various manufacturers for research work. The 1.85 mm connector mates with the 2.4 mm connector and has the same ruggedness. In recent years, the 1.85 mm connector has been optimized to operate mode-free to 67 GHz.

Appendix: Literature References

Agilent RF and Microwave Test Accessories Catalog 5990-8661EN
(www.agilent.com/find/mta)

86100D DCA-X Data Sheet 5990-5824EN
(www.agilent.com/find/dcax)

Using the Agilent N5477A Sampling Oscilloscope Adapter N5477-97000



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