

# SUCOFLEX® 104

## Variations

SUCOFLEX 104, 104P(E) cables that can be universally applied with the widest range of connector types, are available with most ruggedisations. In applications in which flexibility is the critical factor, the cable type SUCOFLEX 104PE must be applied. In conjunction with the Q adaptor, which is a simple system for exchanging the connectors as well as the special connections for Agilent Technologies analysers, the two types constitute the ideal choice for use as test cables on network analysers. For assemblies used in EMC-critical applications, the M ruggedisation is available. This results in yet another considerable improvement of the high screening effectiveness below 100 MHz.

## Mechanical and general data

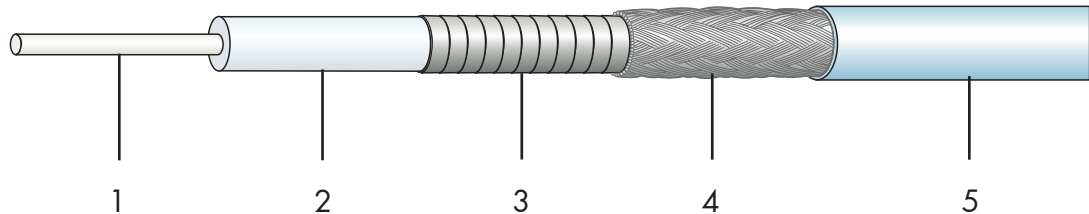
SUHNER type	Cable	Ruggedisation	Temperature		Weight kg/100m	Outer dia. (mm)	Bending radii	
			min. (°C)	max. (°C)			static (mm)	dyn. (mm)
SF 104	SF 104	-	-55	+165	8.4	5.50	16	25
SF 104A	SF 104	A	-40	+85	17.3	10.30	30	50
SF 104E	SF 104E	-	-40	+85	8.3	5.50	16	25
SF 104EA	SF 104E	A	-40	+85	17.2	10.30	30	50
SF 104EM	SF 104E	M	-40	+85	12.1	7.70	40	80
SF 104B	SF 104	B	-55	+165	18.9	10.00	45	45
SF 104C	SF 104	C	-25	+135	19.3	10.30	30	50
SF 104D	SF 104	D	-55	+165	9.6	6.10	20	30
SF 104G	SF 104	G	-50	+100	22.6	13.70	60	100
SF 104P	SF 104P	-	-55	+165	6.9	5.50	16	25
SF 104PE	SF 104PE	-	-40	+85	6.8	5.50	16	25
SF 104PEA	SF 104PE	A	-40	+85	17.1	10.30	30	50
SF 104PB	SF 104P	B	-55	+165	18.7	10.00	45	45
SF 104PEM	SF 104PE	M	-40	+85	13.6	7.70	40	80

Further information about ruggedisation see pages 128 ff.

# SUCOFLEX® 104

Order code n/a

## Cable design



	Description	Material	Diameter
1. Centre conductor	Solid silver-plated copper wire	CuAg	
2. Dielectric	Low density PTFE	LDPTFE	
3. 1st outer conductor	Silver-plated copper tape, wrapped	CuAg	
4. 2nd outer conductor	Silver-plated copper braid	CuAg	
5. Jacket	Fluoroethylenepropylene, blue	FEP	5.50 mm
Marking	none		

## Electrical cable data

Impedance			50 Ohm
Operating frequency			26.5 GHz
Capacitance			87 pF/m
Velocity of propagation			77 %
Time delay			4.3 ns/m
Nom. attenuation*	coefficient a	<b>0.2291</b>	coefficient b <b>0.0071</b>
Max. attenuation*	coefficient a	<b>0.2520</b>	coefficient b <b>0.0078</b>
Max. operating voltage			2.6 kVrms
Min. screening effectiveness up to 18 GHz			90 dB

\*Attenuation calculation  $a_{25} = a \cdot \sqrt{f}(\text{GHz}) + b \cdot f(\text{GHz})$  (dB/m)

## General cable data

Temperature range	-55...+165 °C
Weight	8.4 kg/100m
Min. bending radius static	16 mm
Min. bending radius dynamic	25 mm

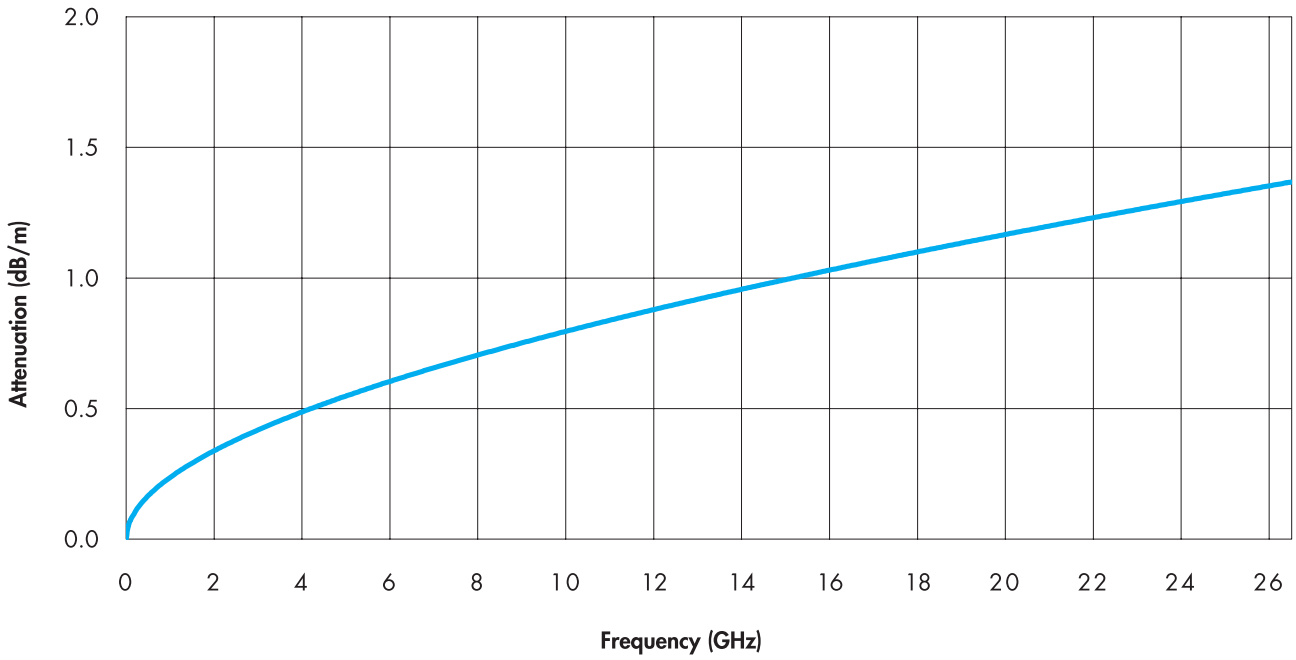
## Suitable connectors

Please refer to pages 118 ff

# SUCOFLEX<sup>®</sup> 104

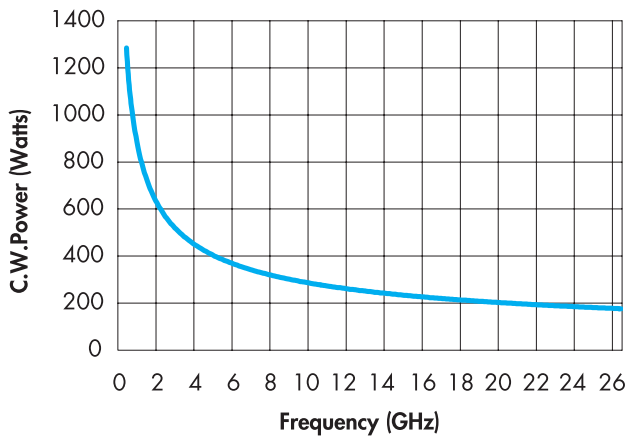
## Cable attenuation

Nominal values @ +25 °C ambient temperature

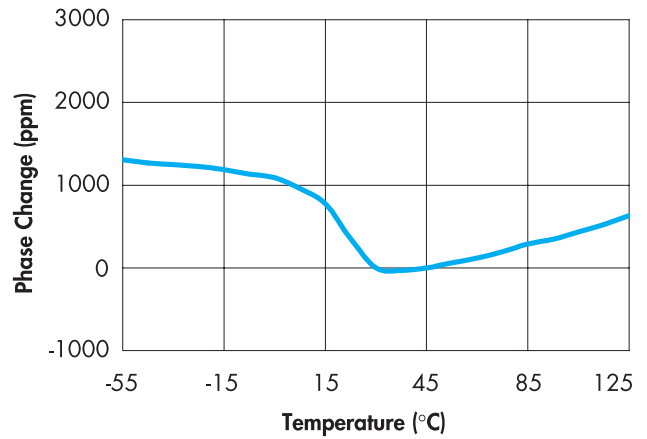


## Power handling

Maximum values @ +40 °C ambient temperature and sea level



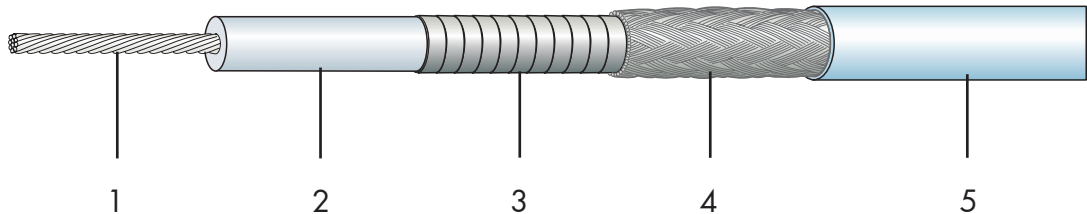
## Phase change vs. temperature



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# SUCOFLEX® 104P

## Cable design



	Description	Material	Diameter
1. Centre conductor	Stranded silver-plated copper wire	CuAg	
2. Dielectric	Low density PTFE	LDPTFE	
3. 1st outer conductor	Silver-plated copper tape, wrapped	CuAg	
4. 2nd outer conductor	Silver-plated copper braid	CuAg	
5. Jacket	Fluoroethylenepropylene, blue	FEP	5.50 mm
Marking	none		

## Electrical cable data

Impedance			50 Ohm
Operating frequency			26.5 GHz
Capacitance			87 pF/m
Velocity of propagation			77 %
Time delay			4.3 ns/m
Nom. attenuation*	coefficient a <b>0.2930</b>	coefficient b <b>0.0175</b>	
Max. attenuation*	coefficient a <b>0.3223</b>	coefficient b <b>0.0192</b>	
Max. operating voltage			2.4 kVrms
Min. Screening effectiveness up to 18 GHz			90 dB

\*Attenuation calculation

$$a_{25} = a \cdot \sqrt{f}(\text{GHz}) + b \cdot f(\text{GHz}) \quad (\text{dB/m})$$

## General cable data

Temperature range	-55...+165 °C
Weight	6.9 kg/100m
Min. bending radius static	16 mm
Min. bending radius dynamic	25 mm

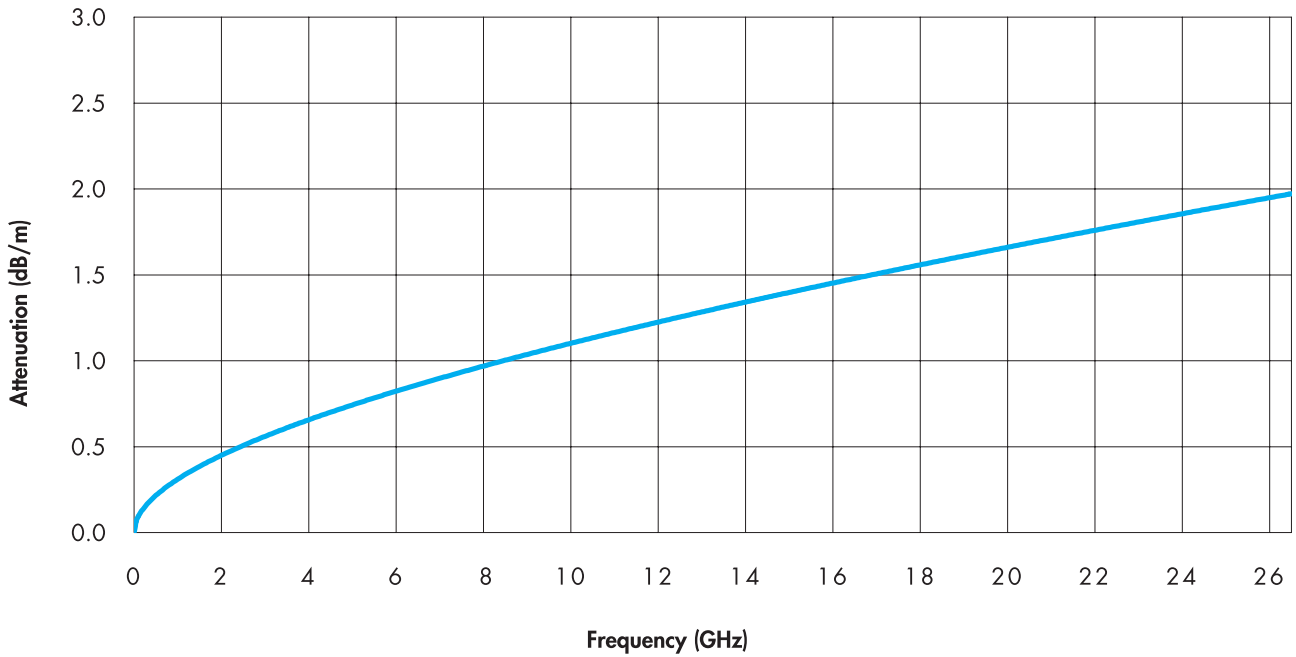
## Suitable connectors

Please refer to pages 118 ff

# SUCOFLEX® 104P

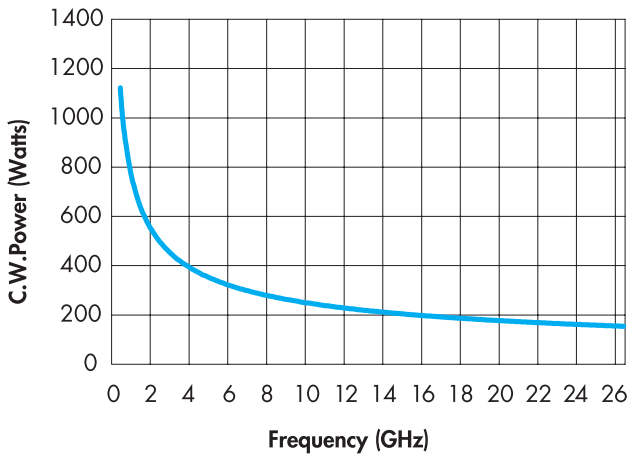
## Cable attenuation

Nominal values @ +25 °C ambient temperature

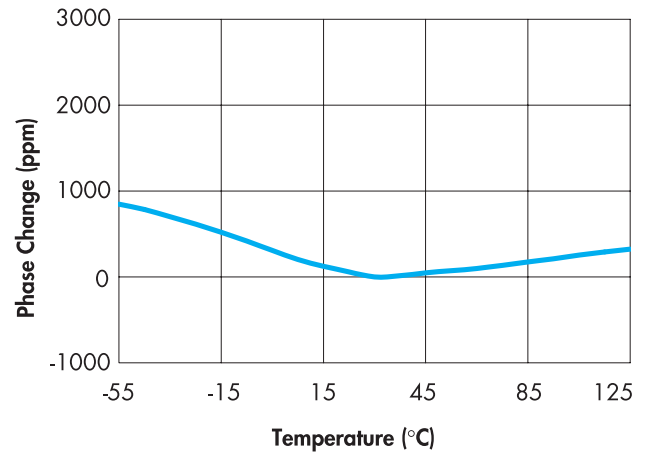


## Power handling

Maximum values @ +40 °C ambient temperature and sea level



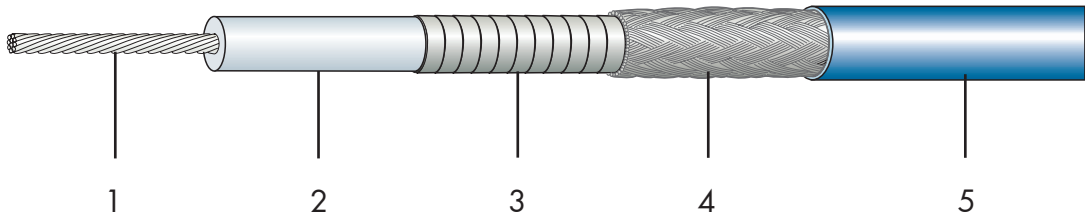
## Phase change vs. temperature



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# SUCOFLEX® 104PE

## Cable design



	Description	Material	Diameter
1. Centre conductor	Stranded silver-plated copper wire	CuAg	
2. Dielectric	Low density PTFE	LDPTFE	
3. 1st outer conductor	Silver-plated copper tape, wrapped	CuAg	
4. 2nd outer conductor	Silver-plated copper braid	CuAg	
5. Jacket	Polyurethane, blue	PUR	5.50 mm
Marking	none		

## Electrical cable data

Impedance			50 Ohm
Operating frequency			26.5 GHz
Capacitance			87 pF/m
Velocity of propagation			77 %
Time delay			4.3 ns/m
Nom. attenuation*	coefficient a <b>0.2930</b>	coefficient b <b>0.0175</b>	
Max. attenuation*	coefficient a <b>0.3223</b>	coefficient b <b>0.0192</b>	
Max. operating voltage			2.4 kVrms
Min. screening effectiveness up to 18 GHz			90 dB

\*Attenuation calculation

$$a_{25} = a \cdot \sqrt{f}(\text{GHz}) + b \cdot f(\text{GHz}) \quad (\text{dB/m})$$

## General cable data

Temperature range	-40...+85 °C
Weight	6.8 kg/100m
Min. bending radius static	16 mm
Min. bending radius dynamic	25 mm

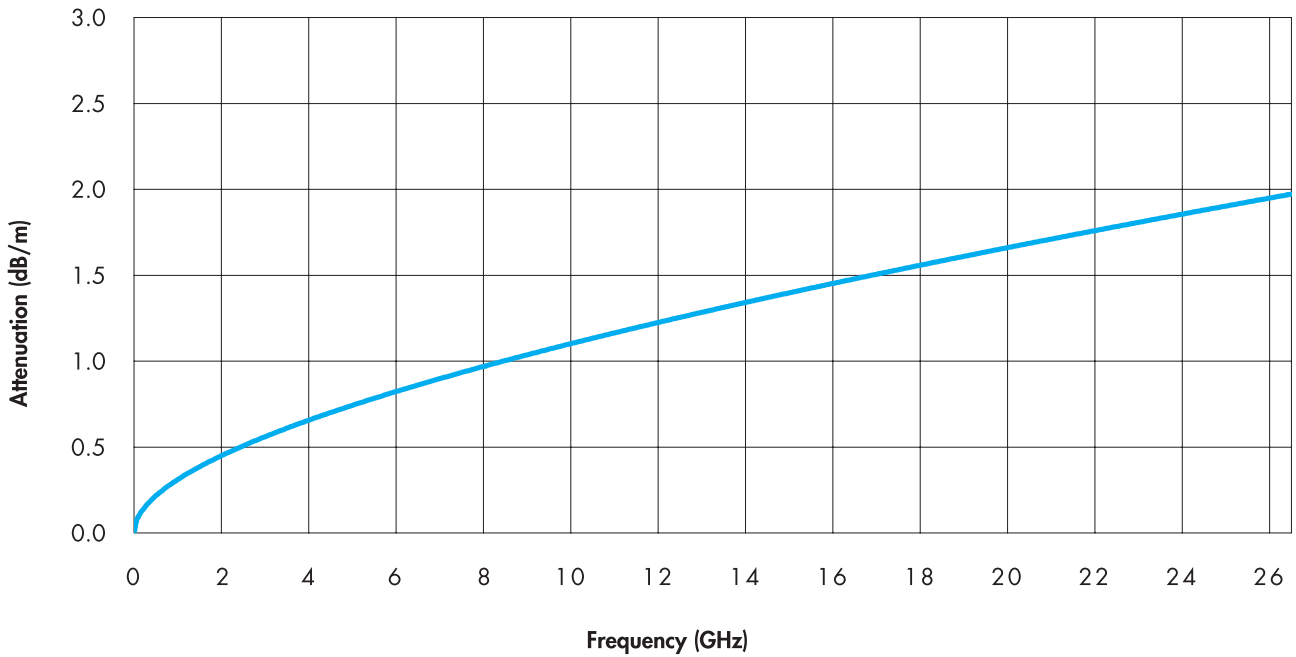
## Suitable connectors

Please refer to pages 118 ff

# SUCOFLEX® 104PE

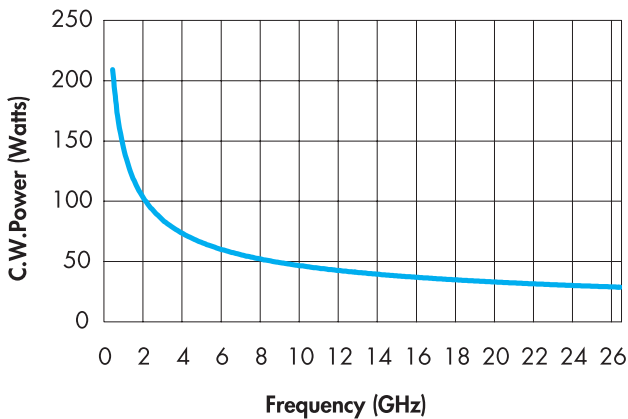
## Cable attenuation

Nominal values @ +25 °C ambient temperature

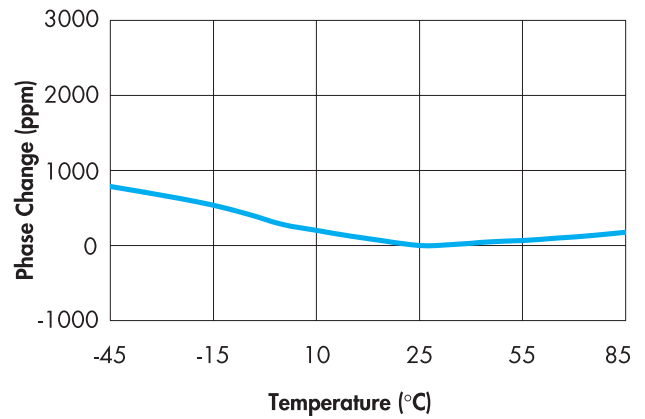


## Power handling

Maximum values @ +40 °C ambient temperature and sea level



## Phase change vs. temperature



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# SUCOFLEX® 104

## Suitable connectors

SUHNER type	SF 104(E)	SF 104A(EA)	SF 104B	SF 104C	SF 104D	SF 104EM	SF 104G	SF 104P(PE)	SF 104PA(PEA)	SF 104PB	SF 104PEM	Remarks	Weight (g)	Operating frequency (GHz)	VSWR <sup>1)</sup>	Fig.
11 BNC-451	•	•	•	•	•	•	•						30.0	4.0	1.14	101
11 BNC-452								•	•	•	•		30.0	4.0	1.14	101
11 DV-41								•	•	•		HP3.5	37.0	26.5	1.16	105
11 DV-42	•	•	•	•	•		•					HP3.5	37.0	26.5	1.16	105
11 N-47	•	•	•	•	•	•	•	•	•	•	•		31.0	15.0 18.0	1.12 1.16	121
11 N-451	•	•	•	•	•	•	•						40.0	18.0	1.12	122
11 N-452								•	•	•	•		41.0	18.0	1.12	122
11 N-453								•	•	•		PM	37.0	18.0	1.16	125
11 N-454	•	•	•	•	•	•	•	•	•	•	•	MIL	32.0	15.0 18.0	1.12 1.16	120
11 N-456	•	•	•	•	•	•	•					MIL	40.0	18.0	1.12	123
11 N-457								•	•	•	•	MIL	41.0	18.0	1.12	123
11 N-459	•	•	•	•	•			•	•	•		QL	32.0	15.0 18.0	1.12 1.16	126
11 N-461								•	•	•	•	SUCOTRIM	57.0	18.0	1.15	127
16 N-44	•	•	•	•	•	•	•					Com.	37.0	12.4 18.0	1.14 1.18	129
16 N-45	•	•	•	•	•	•	•					MIL	37.0	12.4 18.0	1.14 1.18	130
16 N-457								•	•	•	•	Com.	87.0	12.4 18.0	1.14 1.18	129
21 N-47	•	•	•	•	•	•	•						30.0	11.0 15.0	1.12 1.16	133
21 N-451	•	•	•	•	•	•	•						32.0	18.0	1.12	134
21 N-452								•	•	•	•		32.0	18.0	1.12	134
24 N-47	•	•	•	•	•	•	•					ML 12	37.0	11.0 15.0	1.12 1.16	136
24 N-451	•	•	•	•	•	•	•					ML 12	43.0	18.0	1.12	135
24 N-452								•	•	•	•	ML 12	43.0	18.0	1.12	135
11 PC3.5-42	•	•	•	•	•	•	•						13.0	18.0 26.5	1.12 1.16	160
11 PC3.5-43								•	•	•	•		13.0	18.0 26.5	1.12 1.16	160



# SUCOFLEX® 104

## Suitable connectors

SUHNER type	SF 104(E)	SF 104A(EA)	SF 104B	SF 104C	SF 104D	SF 104EM	SF 104G	SF 104P(PE)	SF 104PA(PEA)	SF 104PB	SF 104PEM	Remarks	Weight (g)	Operating frequency (GHz)	VSWR <sup>1)</sup>	Fig.
21 PC3.5-42	•	•	•	•	•	•	•						12.0	18.0 26.5	1.12 1.16	161
21 PC3.5-43								•	•	•	•		12.0	18.0 26.5	1.12 1.16	161
11 PC7-41	•	•	•	•	•	•	•						40.0	18.0	1.10	165
11 PC7-42								•	•	•	•		41.0	18.0	1.10	165
Q	•	•	•	•									40.0	n/a	n/a	n/a
PQ								•	•	•			41.0	n/a	n/a	n/a
11 SMA-451	•	•	•	•	•	•	•	•	•	•	•		8.2	18.0	1.12	170
11 SMA-452								•	•	•		PM	12.0	18.0	1.16	172
11 SMA-456	•	•	•	•	•	•	•	•	•	•	•	MIL	8.2	18.0	1.12	170
11 SMA-457								•	•	•	•	SUCOTRIM	32.0	18.0	1.15	173
11 SMA-468	•	•	•	•	•							QL	8.2	18.0	1.12	171
16 SMA-451	•	•	•	•	•	•	•						8.8	18.0	1.12	174
16 SMA-452								•	•	•	•		11.0	18.0	1.12	174
16 SMA-456	•	•	•	•	•	•	•					MIL	8.7	18.0	1.12	174
21 SMA-451	•	•	•	•	•	•	•	•	•	•	•		6.8	18.0	1.12	175
24 SMA-451	•	•	•	•	•	•	•	•	•	•	•	ML 35	7.9	18.0	1.12	177
11 TNC-417								•	•	•		QL	19.0	12.4 18.0	1.14 1.18	195
11 TNC-418	•	•	•	•	•							QL	19.0	12.4 18.0	1.14 1.18	195
11 TNC-456								•	•	•	•		19.0	18.0	1.12	191
11 TNC-457	•	•	•	•	•	•	•						19.0	18.0	1.12	191
11 TNC-458								•	•	•			22.0	18.0	1.16	193
11 TNC-459								•	•	•		SUCOTRIM	36.0	18.0	1.15	194
16 TNC-454	•	•	•	•	•	•	•						23.0	18.0	1.14	196
24 TNC-456								•	•	•	•	ML 4	37.0	18.0	1.12	199
24 TNC-457	•	•	•	•	•	•	•					ML 4	19.0	18.0	1.12	198
25 TNC-452	•	•	•	•	•	•	•					ML 8	22.0	18.0	1.12	200

# SUCOFLEX® 104

## Suitable connectors

SUHNER type	SF 104(E)	SF 104A(EA)	SF 104B	SF 104C	SF 104D	SF 104EM	SF 104G	SF 104P(PE)	SF 104PA(PEA)	SF 104PB	SF 104PEM	Remarks	Weight (g)	Operating frequency (GHz)	VSWR <sup>1)</sup>	Fig.
11 4195-41	•	•	•	•	•	•	•						55.0	7.5	1.12	210
24 4195-41	•	•	•	•	•	•	•						64.0	7.5	1.12	211
11 716-401	•	•		•	•								113.0	7.5	1.12	220
11 716-402								•	•				118.0	7.5	1.12	220
21 716-401	•	•		•	•								105.0	7.5	1.12	222
21 716-402								•	•				111.0	7.5	1.12	222
25 716-401	•	•	•	•	•	•	•						116.0	7.5	1.12	224

### Connector patterns

11	Straight cable plug	24	Straight panel bulkhead cable jack
16	Right angle cable plug	25	Straight panel cable jack, flange mount
21	Straight cable jack		

<sup>1)</sup> VSWR per connector

ML xx: Mounting hole size xx refer to section "connector drawings", page 165

Com.: Connector with combi nut

MIL: Connector with safety holes and hex nut for military and airframe applications

QL: Quick lock refer to section "special solutions", page 130

PM: Phase matching connector

HP3.5: 3.5 mm connection for Agilent Technologies equipment

SUCOTRIM: with integrated phase trimmer refer to section "special solutions, page 131

**Note:** For dimensioned sketches of connectors, please refer to pages 140 ff.

Other connector types are available on request. Please contact your [local HUBER+SUHNER partner](#).