Overview SUCOFLEX® 300

The light weight, high performance cable assembly

Product description

The SUCOFLEX 300 lightweight, low-loss flexible microwave cable assemblies are high-end products designed to meet the stringent needs of space flight systems (e. g. satellites) and aerospace systems (aircraft, helicopters, missiles), which are subjected to extremely severe operating conditions.
The 300 series offers a consistently outstanding mechanical and electrical performance, stability and reliability up to 40 GHz. The added feature of this SUCOFLEX type is a weight reduction of up to 50 % compared to our conventional products.

Product features for space applications

- Assemblies produced in a clean environment room
- Specifically designed lightweight connectors
- Extensive testing of assemblies
- High-end assemblies approved by Europe's leading satellite manufacturers

Product features for defense applications

- Lightweight reduces overall system weight and aids portability
- Rugged connectors made for easy serviceability
- Specialised range of connectors, which is being continuously extended
- Comprehensive tested product range
- High-end product approved for most sophisticated military aircraft
- Additional D-armour provide increased crush and abrasion resistance

Recommended connectors

SF301 SF301_Space	SMA
SF302	SMA, SK, PC2.4
SF304 SF304_Space	SMA, N, TNC
SF307_Space	TNC
SF329	SMA, SK, TNC, N
SF340	SMA, SK
	Other connectors available on request

Technical data

HUBER+SUHNER cable type	Operating frequency	Temperature range	Outer diameter	Nominal attenuation 18 GHz, 25 °C	Bending radii		Weight	More information see page
	GHz	°C	mm	dB/m	static mm	repeated mm	g	
SUCOFLEX 301	18	–55 to +125	3.5	2.0	15	20	23.9	47
SUCOFLEX 301_Space	18	–55 to +150	3.5	2.0	15	20	23.9	47
SUCOFLEX 302	40	–55 to +125	3.7	1.9	15	30	29.0	50
SUCOFLEX 304	18	–55 to +125	5.4	1.2	20	50	46.0	54
SUCOFLEX 304_Space	18	–55 to +150	5.4	1.2	20	50	46.0	54
SUCOFLEX 307_Space	8	–55 to +150	9.0	0.4 at 8 GHz	50	100	133	57
SUCOFLEX 329	29	–65 to +165	5.1	1.0	23	70	42	60
SUCOFLEX 340	40	–65 to +165	4.2	1.6	8.4	25	18	63

SUCOFLEX® 301

The light weight, high performance microwave cable assembly working up to 18 GHz

Product description

The SUCOFLEX 301 light weight, high end cable assemblies are designed to provide optimal performance up to 18 GHz were light weight, stringent electrical requirements – in particular stability and low loss, are important.

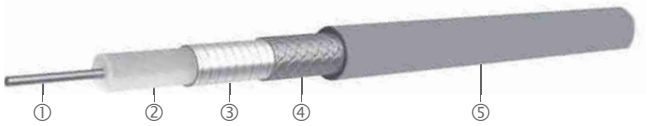
Product features

- Impedance 50 Ω
- Applicable up to 18 GHz
- Up to 40 % weight reduction compared to standard SUCOFLEX 101 assemblies (lower launching costs)
- Production in clean room
- All space connectors vented
- Outgassing according ECSS-Q-ST-70-02C and NASA reference publication 1124
- MIL-DTL-17 qualified
- Low loss

Recommended connectors

SF301 SF301_Space	SMA
	Other connectors available on request

Construction



Cable	Inner conductor ①	Dielectric ②	Outer conductor ③④	Jacket ⑤	Outer diameter
					mm
SUCOFLEX_301	AlCuAg wire	LD-PTFE	CuAg tape/AlCuAg braid	ETFE, blue	3.5
SUCOFLEX_301_Space	AlCuAg wire	LD-PTFE	CuAg tape/AlCuAg braid	ETFE, blue	3.5

Other SUCOFLEX 301 cables available on request.

Available connectors

Connector	Series, pattern	HUBER+SUHNER connector type	SF301	SF301_ Space	Op. freq.	VSWR per connector	Remarks
					GHz		
SMA	straight cable plug	11_SMA-153	•		18	1.12	
	straight cable plug	11_SMA-187_Space		•	12 18	1.07 1.12	vented
	right angle cable plug	16_SMA-189_Space		•	12 18	1.07 1.12	vented

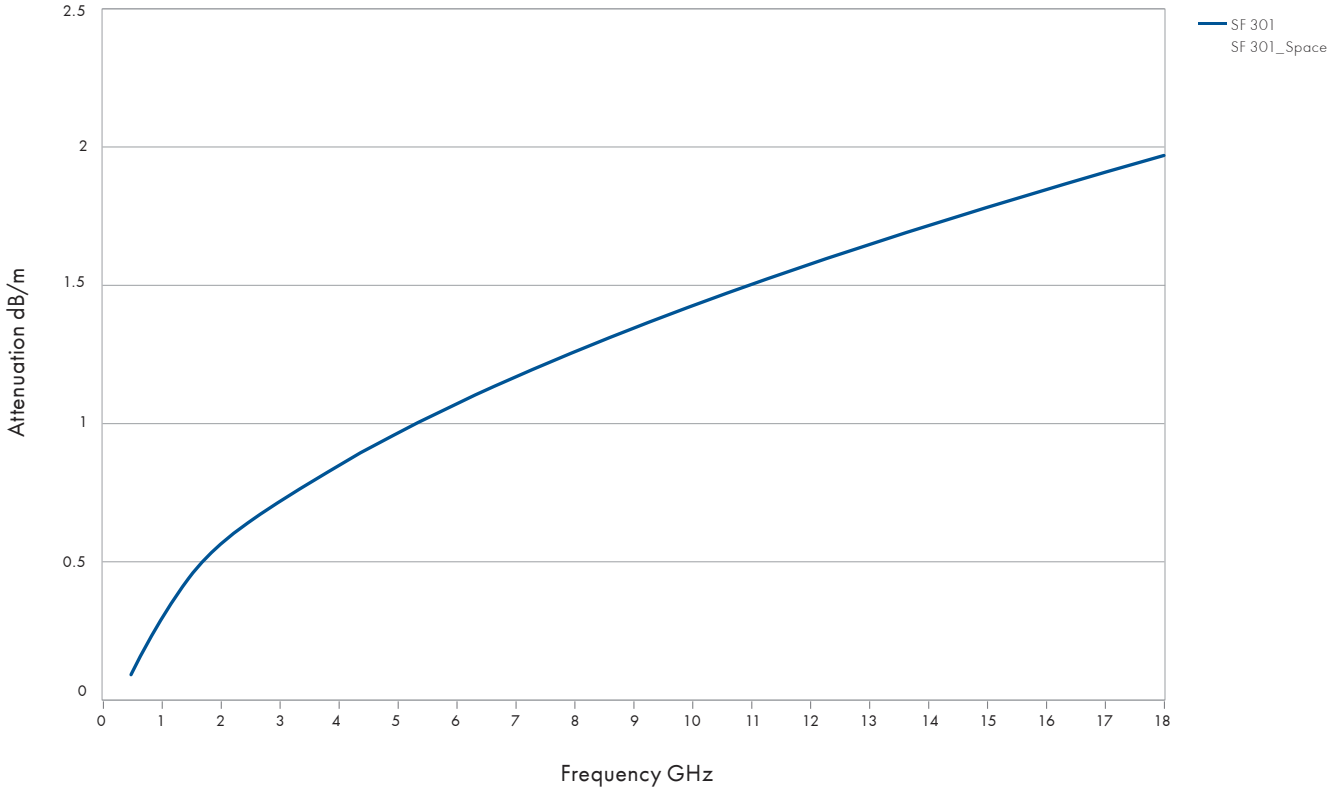
SUCOFLEX® 301

Assembly types

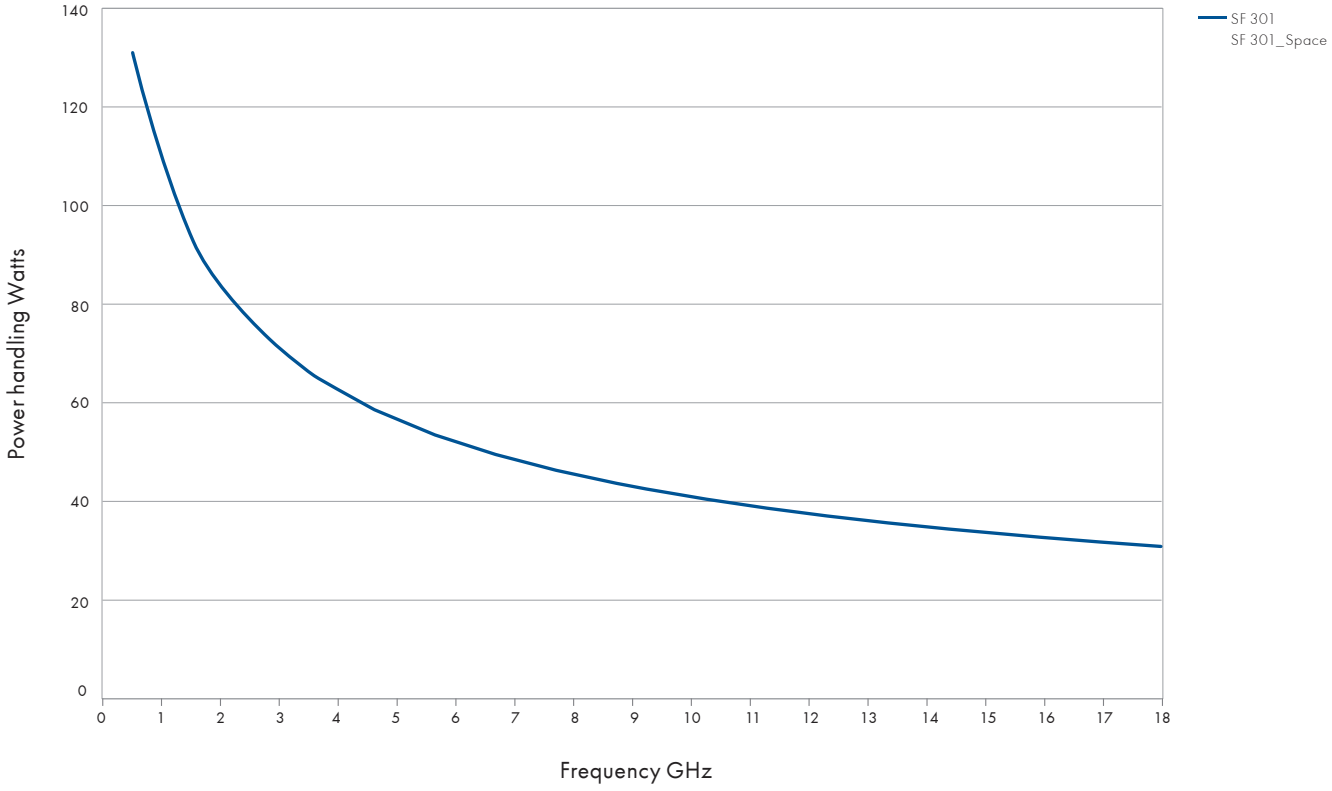
		SUCOFLEX 301	SUCOFLEX 301_Space
Construction			
Max. operating frequency	GHz	18	18
Application		static	static
Velocity of propagation	%	77	77
Weight	g/m	23.9	23.9
Min. bending radius static	mm	15	15
Min. bending radius repeated	mm	20	20
Temperature range	°C	–55 to +125	–55 to +150
Tensile load	N	100	100
Inner conductor		solid wire	solid wire
Dielectric		LD-PTFE	LD-PTFE
Outer conductor		tape/braid	tape/braid
Jacket		ETFE	ETFE
Outer diameter	mm	3.5	3.5
Screening effectiveness (up to 18 GHz)	dB	> 90	> 90
Phase stability vs. flexure (360°, diameter 40 mm)	°el/GHz	< 1.5	< 1.5
Phase stability vs. temperature (–40 to +85 °C)	ppm	< 1500	< 1500
Assembly phase matching tolerances	°el/GHz	± 0.5	± 0.5
Cable attenuation at 25 °C	dB/m	see graph	see graph
Insertion loss stability vs. bending	dB	± 0.2	± 0.2
Insertion loss stability vs. temperature	%/°C	< 0.2	< 0.2
Insertion loss stability vs. shaking	dB	± 0.1	± 0.1
Power handling	watt	see graph	see graph
Radiation-gamma	Mrad	n/a	30
Connectors vented		no	yes
Out gassing according ECSS-Q_ST-70-02 and NASA reference publication 1124		no	TML < 1 %, CVCM < 0.1 %
Soldering according to ESA qualified materials and processes		no	ECSS-Q-70-08A and ECSS-Q-70-18A
Assembling in clean room		no	general: class 10 000 working area: class 100

SUCOFLEX® 301

Attenuation (nominal values at +25 °C ambient temperature)



Power handling (maximum values at 25 °C ambient temperature and sea level)



Abbreviations see page 180

SUCOFLEX® 302

The light weight, high performance microwave cable assembly working up to 40 GHz

Product description

The SUCOFLEX 302 light weight, high end cable assemblies are designed to provide optimal performance up to 40 GHz were light weight, stringent electrical requirements – in particular stability and low loss, are important.

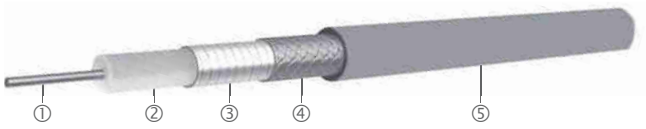
Product features

- Impedance 50 Ω
- Applicable up to 40 GHz
- Up to 35 % weight reduction compared to standard SUCOFLEX 102 assemblies
- High reliability and stability
- Low loss

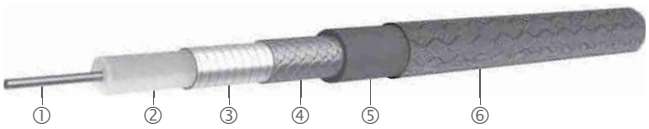
Recommended connectors

SF302 SF302D	SMA, SK, PC2.4, PC3.5, TNC, N
	Other connectors available on request

Construction



SF 302



SF 302_D

Cable	Inner conductor ①	Dielectric ②	Outer conductor ③④	Jacket ⑤	Ruggedisation ⑥	Outer diameter
						mm
SUCOFLEX_302	AlCuAg wire	LD-PTFE	CuAg tape/ AlCuAg braid	ETFE, blue	no	3.7
SUCOFLEX_302_D	AlCuAg wire	LD-PTFE	CuAg tape/ AlCuAg braid	ETFE	aramid yarn braid, blue	4.3

Other SUCOFLEX 302 cables available on request.

SUCOFLEX® 302

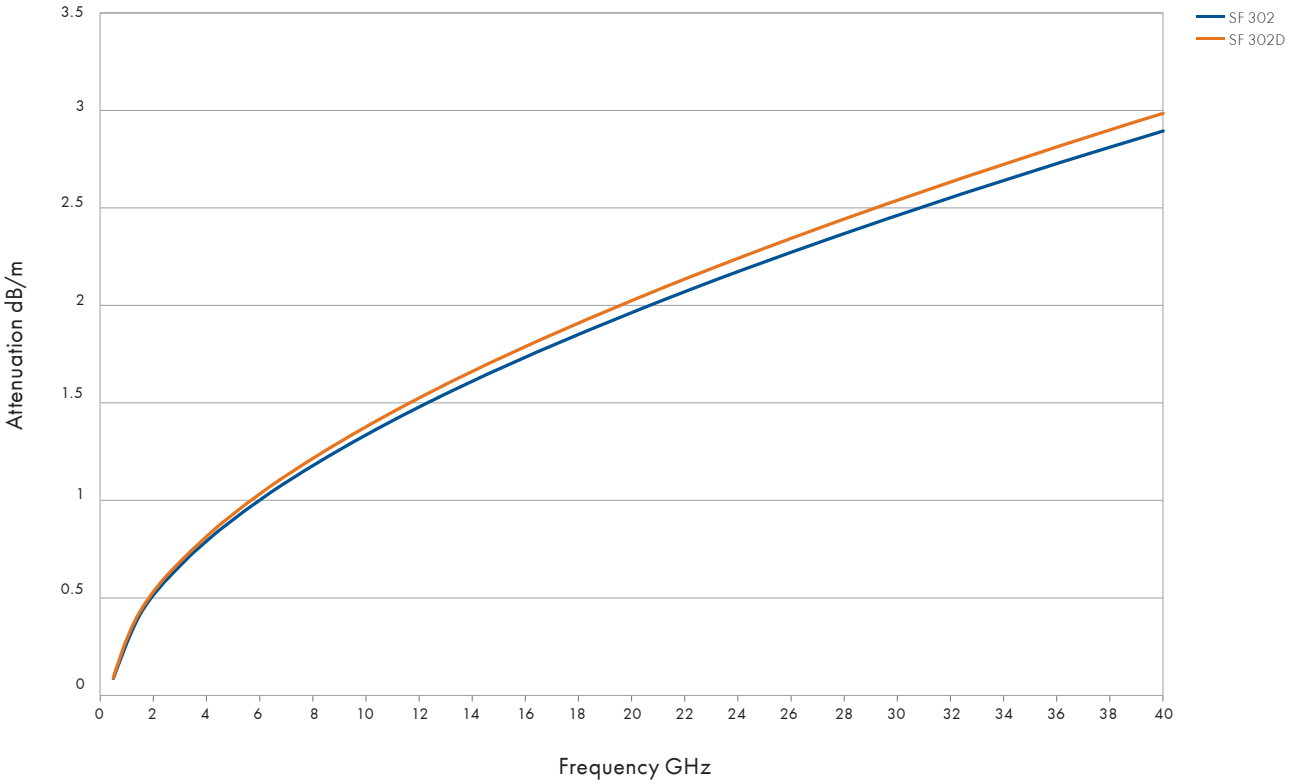
Assembly types

		SUCOFLEX 302	SUCOFLEX 302D
Construction			
Max. operating frequency	GHz	40	40
Application		static	static
Velocity of propagation	%	77	77
Weight	g/m	29	31
Min. bending radius static	mm	15	15
Min. bending radius repeated	mm	30	30
Temperature range	°C	–55 to +125	–55 to +125
Tensile load	N	150	150
Inner conductor		solid wire	solid wire
Dielectric		LD-PTFE	LD-PTFE
Outer conductor		tape/braid	tape/braid
Jacket		ETFE	ETFE
Ruggedisation		no	aramid yarn braid
Outer diameter	mm	3.7	4.3
Screening effectiveness (up to 18 GHz)	dB	> 90	> 90
Phase stability vs. flexure (360°, diameter 40 mm)	°el/GHz	< 1.5	< 1.5
Phase stability vs. temperature (–40 to +85 °C)	ppm	< 1500	< 1500
Assembly phase matching tolerances	°el/GHz	± 0.5	± 0.5
Cable attenuation at 25 °C	dB/m	see graph	see graph
Insertion loss stability vs. bending	dB	± 0.2	± 0.2
Insertion loss stability vs. temperature	%/°C	< 0.2	< 0.2
Insertion loss stability vs. shaking	dB	± 0.1	± 0.1
Power handling	watt	see graph	see graph
Connectors vented		no	no
Assembling in clean room		no	no

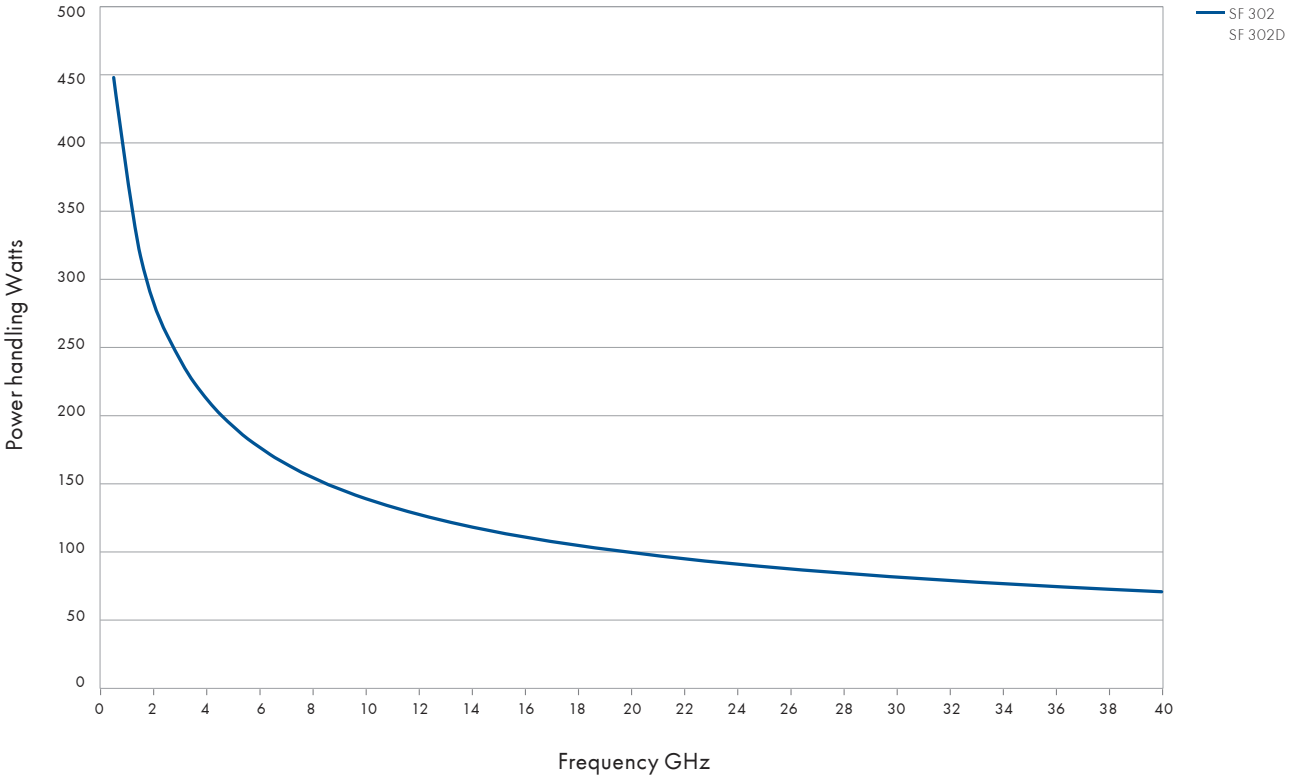
Abbreviations see page 180

SUCOFLEX® 302

Attenuation (nominal values at +25 °C ambient temperature)



Power handling (maximum values at 25 °C ambient temperature and sea level)



SUCOFLEX® 302

Available connectors

Connector	Series, pattern	HUBER+SUHNER connector type	SF302	SF302D	Operating frequency	VSWR per connector	Remarks
					GHz		
SK	straight cable plug	11_SK-252	•	•	40	1.20	
	right angle cable plug	16_SK-252	•	•	40	1.20	
	straight cable jack	21_SK-252	•	•	40	1.20	
	straight panel bulkhead cable jack	24_SK-251	•	•	40	1.20	ML 35
N	straight cable plug	11_N-206	•	•	18	1.12	
PC 2.4	straight cable plug	11_PC2.4-201	•	•	40	1.20	
	straight cable jack	21_PC2.4-201	•	•	40	1.20	
	straight panel bulkhead cable jack	24_PC2.4-201	•	•	40	1.20	ML 38
PC 3.5	straight cable plug	11_PC3.5-203	•	•	26.5	1.16	
	straight cable jack	21_PC3.5-203	•	•	26.5	1.16	
SMA	straight cable plug	11_SMA-218	•	•	18 26.5	1.12 1.20	
	right angle cable plug	16_SMA-254	•	•	18	1.12	
	straight cable jack	21_SMA-204	•	•	18 26.5	1.12 1.20	
	straight panel bulkhead cable jack	24_SMA-210	•	•	18 26.5	1.12 1.20	ML 20
TNC	straight cable plug	11_TNC-222	•	•	18	1.12	
	straight panel bulkhead cable jack	24_TNC-222	•	•	18	1.12	ML 4

Abbreviations see page 180

SUCOFLEX® 304

The light weight, high performance microwave cable assembly working up to 18 GHz

Product description

The SUCOFLEX 304 light weight, high end cable assemblies are designed to provide optimal performance up to 18 GHz were light weight, stringent electrical requirements – in particular stability and lowest loss, are important.

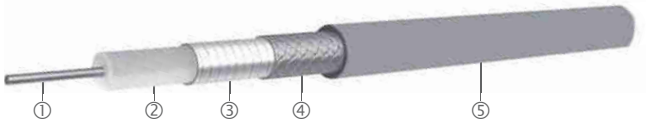
Product features

- Impedance 50 Ω
- Applicable up to 18 GHz
- 45 % weight reduction compared to standard SUCOFLEX 104 assemblies (lower launching costs)
- Production in clean room
- All space connectors vented
- Outgassing according ECSS-Q-ST-70-02C and NASA reference publication 1124
- MIL-DTL-17 qualified

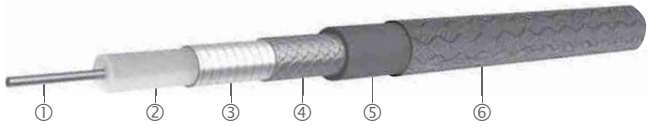
Recommended connectors

SF304 SF304D SF304_Space	SMA, TNC
	Other connectors available on request

Construction



SF 304/SF 304_Space



SF 304_D

Cable	Inner conductor ①	Dielectric ②	Outer conductor ③④	Jacket ⑤	Ruggedisation ⑥	Outer diameter
						mm
SUCOFLEX_304	AlCuAg wire	LD-PTFE	CuAg tape/AlCuAg braid	ETFE, blue	no	5.4
SUCOFLEX_304_D	AlCuAg wire	LD-PTFE	CuAg tape/AlCuAg braid	ETFE	aramid yarn braid, blue	6.0
SUCOFLEX_304_Space	AlCuAg wire	LD-PTFE	CuAg tape/AlCuAg braid	ETFE, blue	no	5.4

Other SUCOFLEX 304 cables available on request.

Available connectors

Connector	Series, pattern	HUBER+SUHNER connector type	SF304	SF304D	SF304_ Space	Operating frequency	VSWR per connector	Remarks
						GHz		
SMA	straight cable plug	11_SMA-459	•	•		18	1.12	
	straight cable plug	11_SMA-487_Space			•	18	1.12	vented
	right angle cable plug	16_SMA-489_Space			•	18	1.12	vented
	straight panel bulkhead cable jack	24_SMA-454	•	•		18	1.20	
TNC	straight cable plug	11_TNC-457	•	•		18	1.12	
	straight panel bulkhead cable jack	24_TNC-457	•	•		18	1.12	

SUCOFLEX® 304

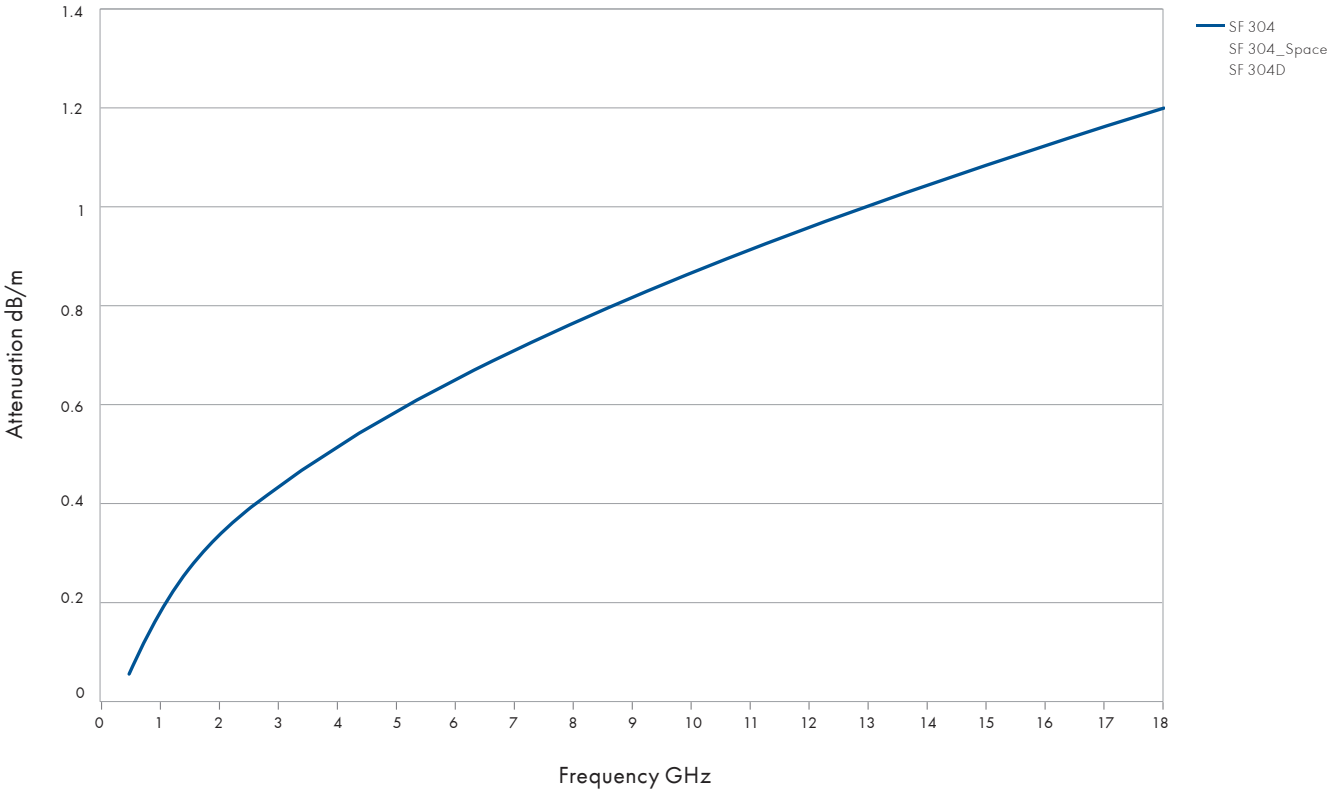
Assembly types

		SUCOFLEX 304	SUCOFLEX 304_Space	SUCOFLEX 304D
Construction				
Max. operating frequency	GHz	18	18	18
Application		static	static	static
Velocity of propagation	%	77	77	77
Weight	g/m	46	46	56
Min. bending radius static	mm	20	20	20
Min. bending radius repeated	mm	50	50	50
Temperature range	°C	–55 to +125	–55 to +150	–55 to +125
Tensile load	N	250	250	250
Inner conductor		solid wire	solid wire	solid wire
Dielectric		LD-PTFE	LD-PTFE	LD-PTFE
Outer conductor		tape/braid	tape/braid	tape/braid
Jacket		ETFE	ETFE	ETFE
Ruggedisation		no	no	aramid yarn braid
Outer diameter	mm	5.4	5.4	6.0
Screening effectiveness (up to 18 GHz)	dB	> 90	> 90	> 90
Phase stability vs. flexure (360°, diameter 55 mm)	°el/GHz	< 1.5	< 1.5	< 1.5
Phase stability vs. temperature (–40 to +85 °C)	ppm	< 1500	< 1500	< 1500
Assembly phase matching tolerances	°el/GHz	± 0.5	± 0.5	± 0.5
Cable attenuation at 25 °C	dB/m	see graph	see graph	see graph
Insertion loss stability vs. bending	dB	± 0.1	± 0.1	± 0.1
Insertion loss stability vs. temperature	%/°C	< 0.2	< 0.2	< 0.2
Insertion loss stability vs. shaking	dB	± 0.1	± 0.1	± 0.1
Power handling	watt	see graph	see graph	see graph
Radiation-gamma	Mrad	n/a	30	n/a
Connectors vented		no	yes	no
Out gassing according ECSS-Q_ST-70-02 and NASA reference publication 1124		no	TML < 1 %, CVCM < 0.1 %	no
Soldering according to ESA qualified materials and processes		no	ECSS-Q-70-08A and ECSS-Q-70-18A	no
Assembling in clean room		no	general: class 10 000 working area: class 100	no

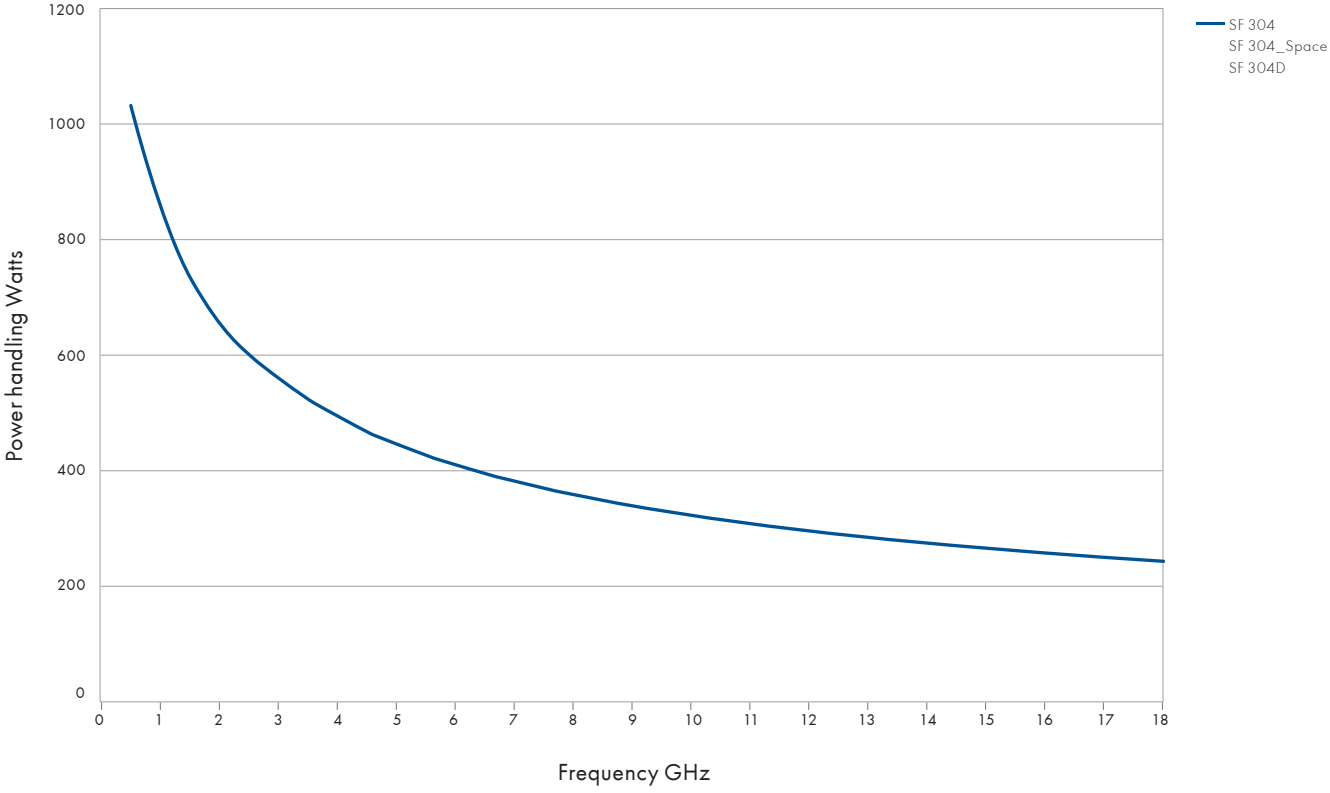
Abbreviations see page 180

SUCOFLEX® 304

Attenuation (nominal values at +25 °C ambient temperature)



Power handling (maximum values at 25 °C ambient temperature and sea level)



SUCOFLEX® 307

The light weight, high performance microwave cable assembly working up to 8 GHz

Product description

The SUCOFLEX 307 light weight, high end cable assemblies are designed to provide optimal performance up to 8 GHz were light weight, high power, stringent electrical requirements – in particular stability and low loss, are important.

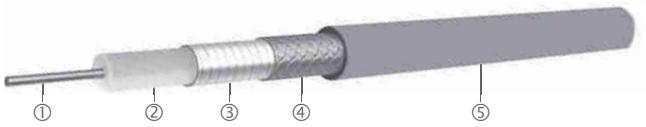
Product features

- Impedance 50 Ω
- Applicable up to 8 GHz
- High power application
- Centre conductor and braid in aluminum instead of copper
- Production in clean room
- Extensive testing of the assembly
- Customer specific qualification
- All connectors vented
- Outgassing according ECSS-Q-ST-70-02C and NASA reference publication 1124
- MIL-DTL-17 qualified
- Mechanical stability
- Low loss

Recommended connectors

SF307_Space	TNC
	Other connectors available on request

Construction



Cable	Inner conductor ①	Dielectric ②	Outer conductor ③④	Jacket ⑤	Outer diameter
					mm
SUCOFLEX_307_Space	AlCuAg wire	LD-PTFE	CuAg tape/AlCuAg braid	ETFE, blue	9.0

Available connectors

Connector	Series, pattern	HUBER+SUHNER connector type	SF307_Space	Operating frequency	VSWR per connector	Remarks
				GHz		
TNC	straight cable plug	11_TNC-721_Space	•	5.5	1.07	vented
	right angle cable plug	16_TNC-721_Space	•	5.5	1.07	vented

Abbreviations see page 180

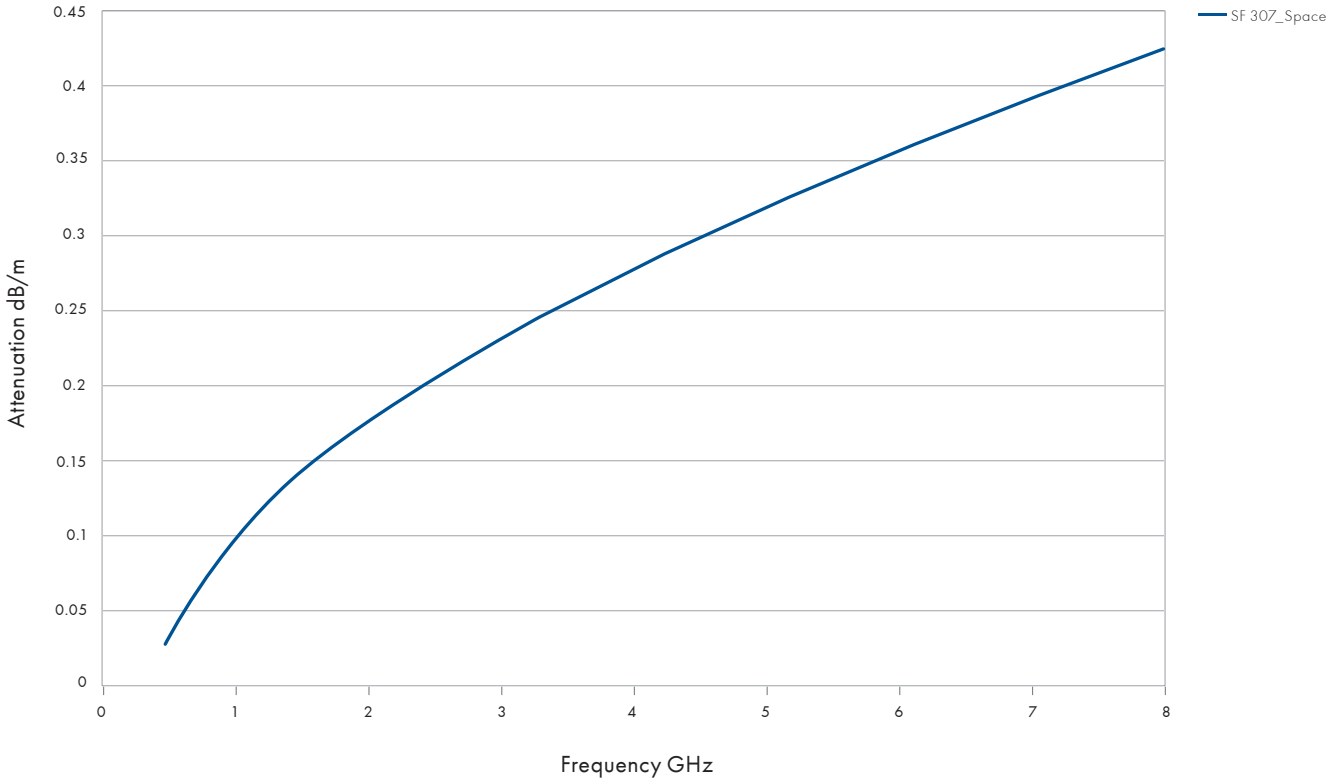
SUCOFLEX® 307

Assembly types

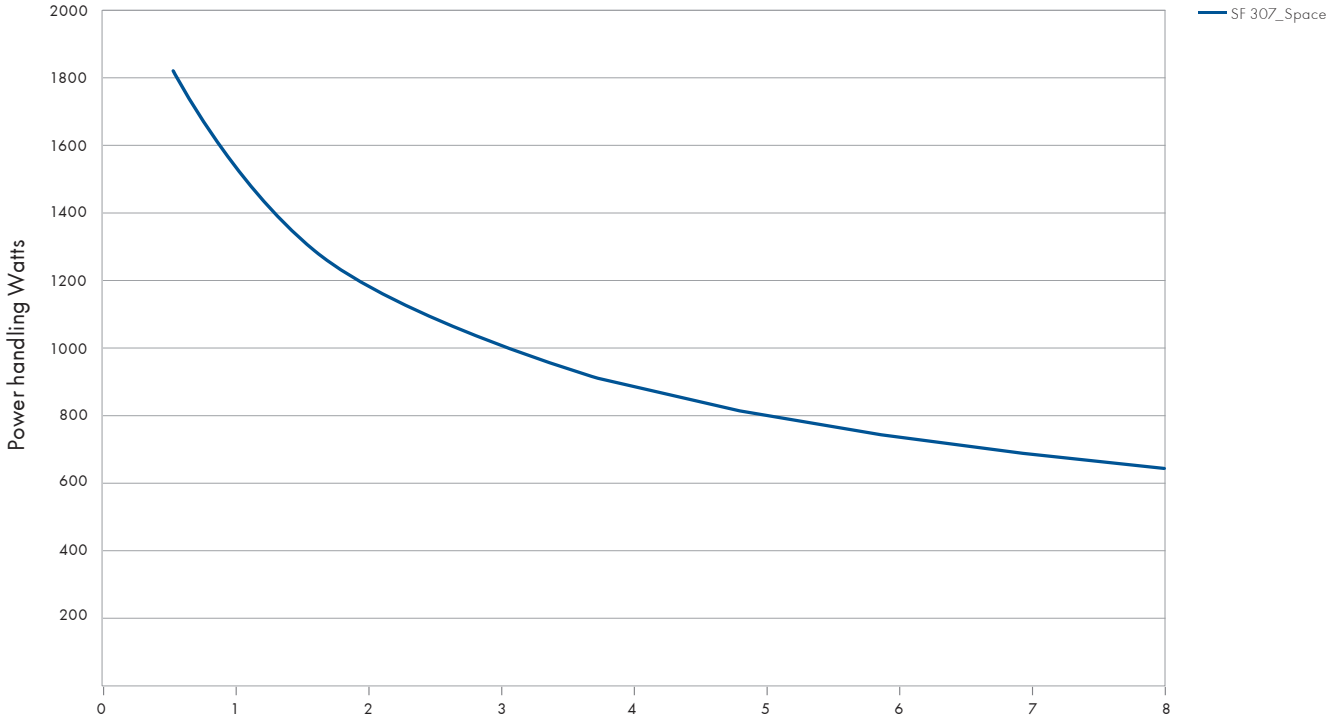
		SUCOFLEX 307_Space
Construction		
Max. operating frequency	GHz	8
Application		static
Velocity of propagation	%	77
Weight	g/m	133
Min. bending radius static	mm	50
Min. bending radius repeated	mm	100
Temperature range	°C	–55 to +150
Tensile load	N	340
Inner conductor		solid wire
Dielectric		LD-PTFE
Outer conductor		tape/braid
Jacket		ETFE
Outer diameter	mm	9.0
Screening effectiveness (up to 18 GHz)	dB	> 90
Phase stability vs. flexure (360°, diameter 125 mm)	°el/GHz	< 2.0
Phase stability vs. temperature (–40 to +85 °C)	ppm	< 1500
Assembly phase matching tolerances	°el/GHz	± 0.5
Cable attenuation at 25 °C	dB/m	see graph
Insertion loss stability vs. bending	dB	± 0.1
Insertion loss stability vs. temperature	%/°C	< 0.45
Insertion loss stability vs. shaking	dB	± 0.1
Power handling	watt	see graph
Radiation-gamma	Mrad	30
Connectors vented		yes
Out gassing according ECSS-Q_ST-70-02 and NASA reference publication 1124		TML < 1 %, CVCM < 0.1 %
Soldering according to ESA qualified materials and processes		ECSS-Q-70-08A and ECSS-Q-70-18A
Assembling in clean room		general: class 10 000 working area: class 100

SUCOFLEX® 307

Attenuation (nominal values at +25 °C ambient temperature)



Power handling (maximum values at 25 °C ambient temperature and sea level)



SUCOFLEX® 329

Light weight, phase stable assembly for space and airborne applications

Product description

The SUCOFLEX 329 offers a consistently outstanding mechanical and electrical performance, stability and reliability up to 29 GHz with triple shielding for improved screening attenuation. The added feature of this SUCOFLEX type is a weight reduction of up to 50 % compared to our conventional products.

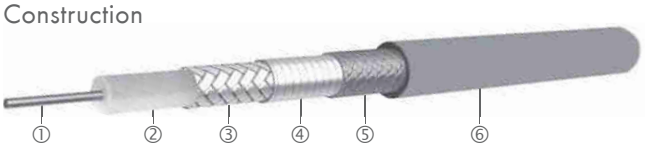
Product features

- Impedance 50 Ω
- Applicable up to 29 GHz
- Light weight
- MIL-DTL-17 qualified
- Low loss and high phase stability vs. temperature
- Outgassing free acc. ESA/NASA
- Standard and high radiation resistance version available

Recommended connectors

SF329	SMA, SK, TNC, N
	Other connectors available on request

Construction



Cable	Inner conductor ①	Dielectric ②	Outer conductor ③	Barrier ④	Outer braid ⑤	Jacket ⑥	Outer diameter
							mm
SUCOFLEX_329	AlCuAg wire	PTFE microporous	CuAg flat wire braid	aluminium/ polyimide tape	AlCuAg	ECTFE, black	5.1

Available connectors

Connector	Series, pattern	HUBER+SUHNER connector type	SF329	Operating frequency	VSWR per connector
				GHz	
SK	straight cable plug	29094KPV	•	29	1.14
SMA	straight cable plug	29094PV	•	26.5	1.14
N	straight cable plug	29080PV	•	18	1.14
TNC	straight cable plug	29714PV	•	18	1.14

SUCOFLEX® 329

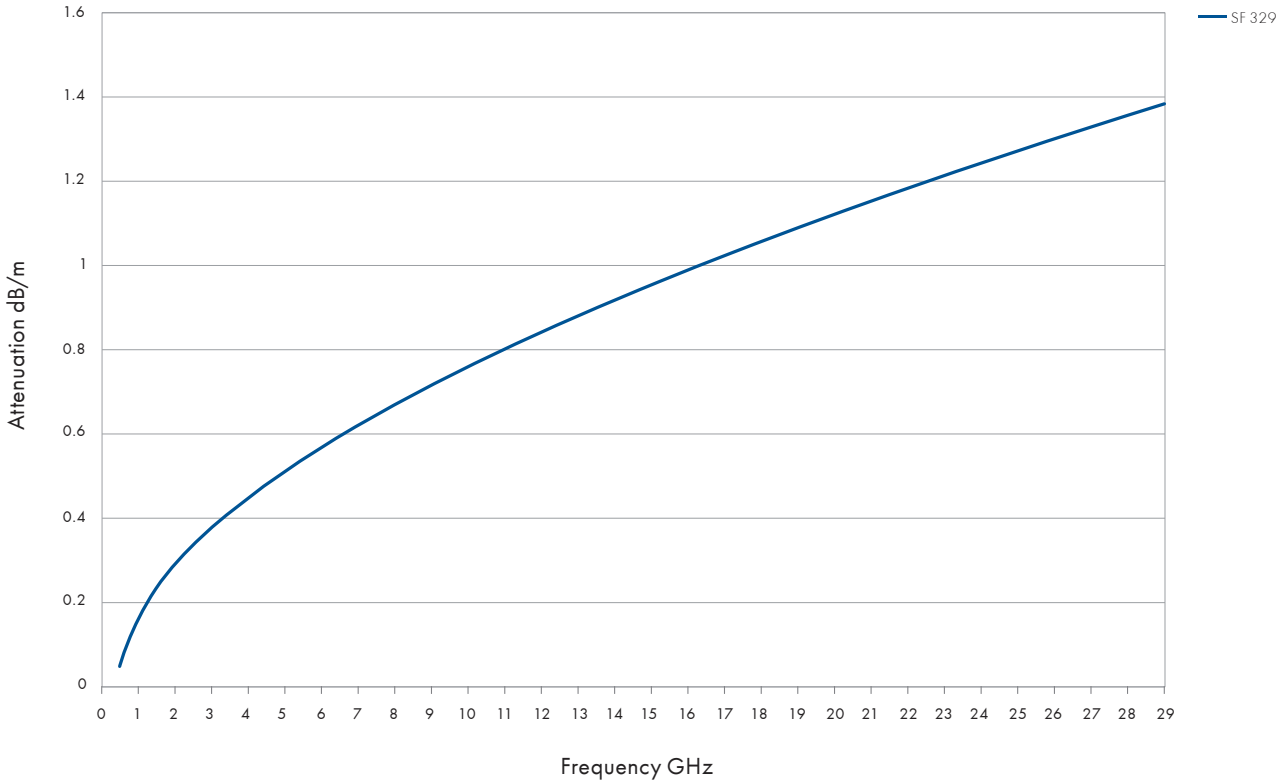
Assembly types

		SUCOFLEX 329
Construction		
Max. operating frequency	GHz	29
Application		static and dynamic
Velocity of propagation	%	82
Weight	g/m	40
Min. bending radius static	mm	23
Min. bending radius repeated	mm	70
Temperature range	°C	–65 to +165
Tensile load	N	133
Inner conductor		solid wire
Dielectric		PTFE microporous
Outer conductor		CuAg flat wire braid
Jacket		ECTFE
Outer diameter	mm	5.1
Screening effectiveness (up to 18 GHz)	dB	> 90
Phase stability vs. flexure (360°, diameter 125 mm)	°el/GHz	< 0.65
Phase stability vs. temperature (–55 to +85 °C)	ppm	< 800
Assembly phase matching tolerances	°el/GHz	± 0.5
Cable attenuation at 25 °C	dB/m	see graph
Insertion loss stability vs. bending	dB	± 0.2
Insertion loss stability vs. temperature	%/°C	< 0.2
Insertion loss stability vs. shaking	dB	± 0.1
Power handling	watt	see graph
Radiation-gamma	Mrad	200
Connectors vented		yes
Out gassing according ECSS-Q_ST-70-02 and NASA reference publication 1124		TML < 1 %, CVCM < 0.1 %
Soldering according to ESA qualified materials and processes		J-STD-001ES
Assembling in clean room		class 100 000

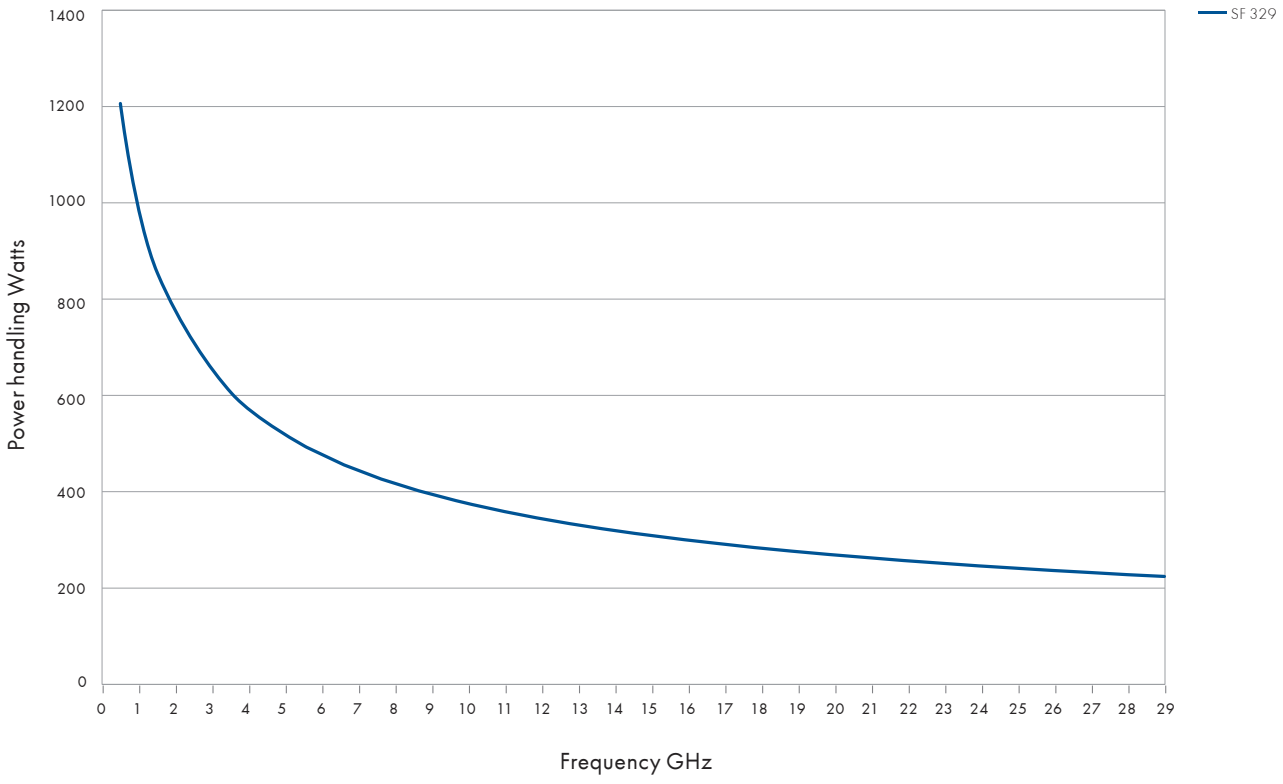
Abbreviations see page 180

SUCOFLEX® 329

Attenuation (nominal values at +25 °C ambient temperature)



Power handling (maximum values at 25 °C ambient temperature and sea level)



SUCOFLEX® 340

Light weight, phase stable assembly for space and airborne applications

Product description

The SUCOFLEX 340 offers a consistently outstanding mechanical and electrical performance, stability and reliability up to 40 GHz with triple shielding for improved screening attenuation. The added feature of this SUCOFLEX type is a weight reduction of up to 50 % compared to our conventional products.

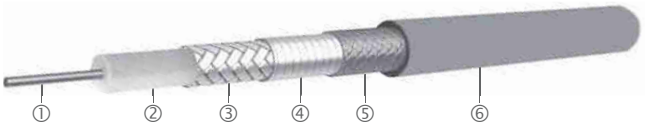
Product features

- Impedance 50 Ω
- Applicable up to 40 GHz
- Light weight
- MIL-DTL-17 qualified
- Low loss and high phase stability vs. temperature
- Outgassing free acc. ESA/NASA
- Standard and high radiation resistance version available

Recommended connectors

SF340	SMA, SK
	Other connectors available on request

Construction



Cable	Inner conductor ①	Dielectric ②	Outer conductor ③	Barrier ④	Outer braid ⑤	Jacket ⑥	Outer diameter
							mm
SUCOFLEX_340	AlCuAg wire	PTFE microporous	CuAg flat wire braid	aluminium/ polyimide tape	AlCuAg	ECTFE, black	4.2

Available connectors

Connector	Series, pattern	HUBER+SUHNER connector type	SF340	Operating frequency	VSWR per connector
				GHz	
SK	straight cable plug	29094KPV	•	40	1.14
SMA	straight cable plug	29094PV	•	26.5	1.14

Abbreviations see page 180

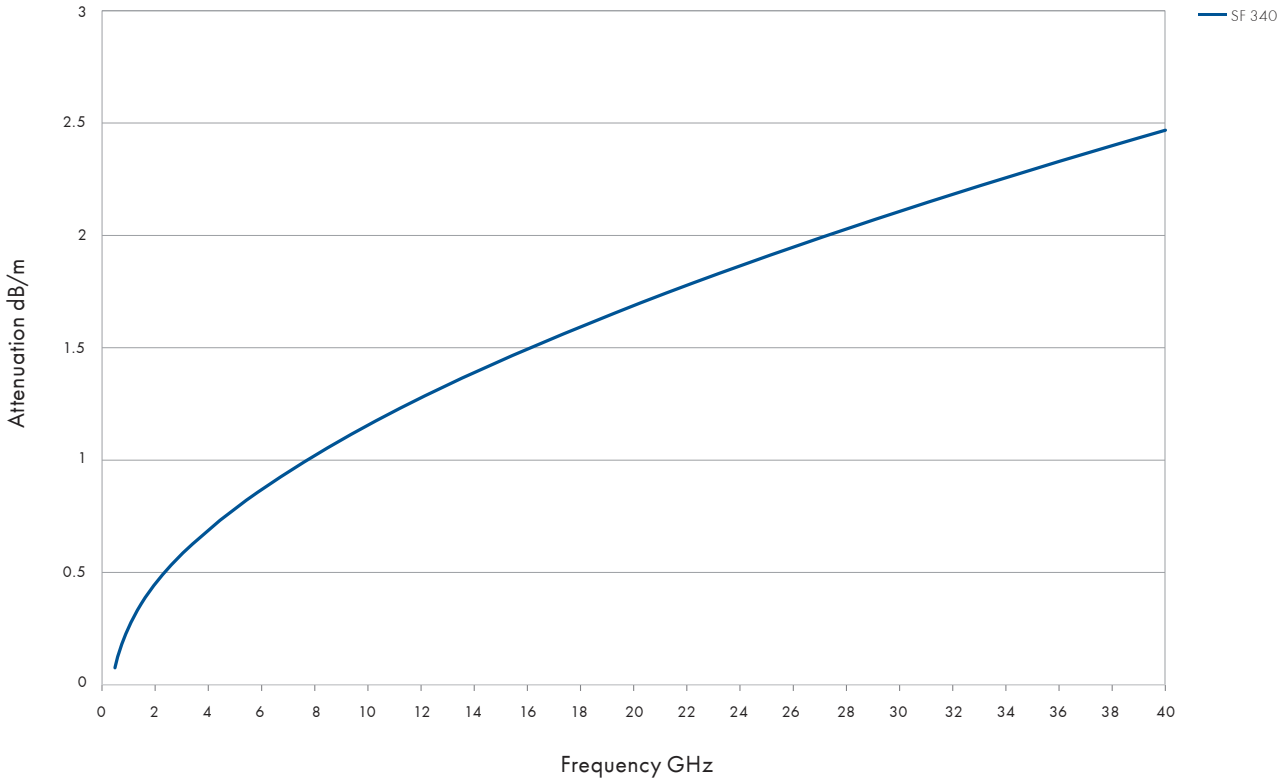
SUCOFLEX® 340

Assembly types

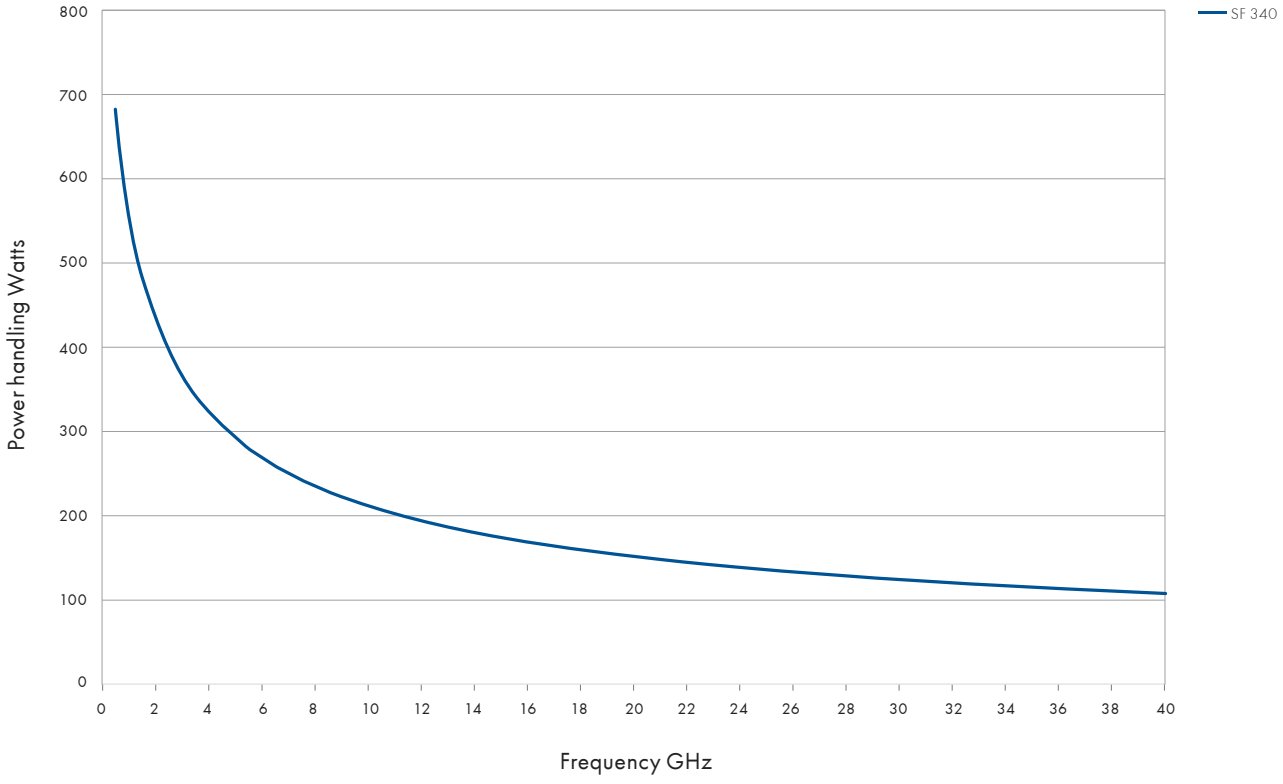
		SUCOFLEX 340
Construction		
Max. operating frequency	GHz	40
Application		static and dynamic
Velocity of propagation	%	82
Weight	g/m	27
Min. bending radius static	mm	8.4
Min. bending radius repeated	mm	25
Temperature range	°C	–65 to +165
Tensile load	N	133
Inner conductor		solid wire
Dielectric		PTFE microporous
Outer conductor		flat wire braid
Jacket		ECTFE
Outer diameter	mm	4.2
Screening effectiveness (up to 18 GHz)	dB	> 90
Phase stability vs. flexure (360°, diameter 125 mm)	°el/GHz	< 0.65
Phase stability vs. temperature (–55 to +85 °C)	ppm	< 800
Assembly phase matching tolerances	°el/GHz	± 0.5
Cable attenuation at 25 °C	dB/m	see graph
Insertion loss stability vs. bending	dB	± 0.2
Insertion loss stability vs. temperature	%/°C	< 0.2
Insertion loss stability vs. shaking	dB	± 0.1
Power handling	watt	see graph
Radiation-gamma	Mrad	200
Connectors vented		yes
Out gassing according ECSS-Q_ST-70-02 and NASA reference publication 1124		TML < 1 %, CVCM < 0.1 %
Soldering according to ESA qualified materials and processes		J-STD-001ES
Assembling in clean room		class 100 000

SUCOFLEX® 340

Attenuation (nominal values at +25 °C ambient temperature)



Power handling (maximum values at 25 °C ambient temperature and sea level)



Abbreviations see page 180