Hwa Yao Technologies Co., Ltd

RoHS

Semi Flexible Coaxial Cable - 0.141 "
RG402

SPECIFICATIONS:

Cable design

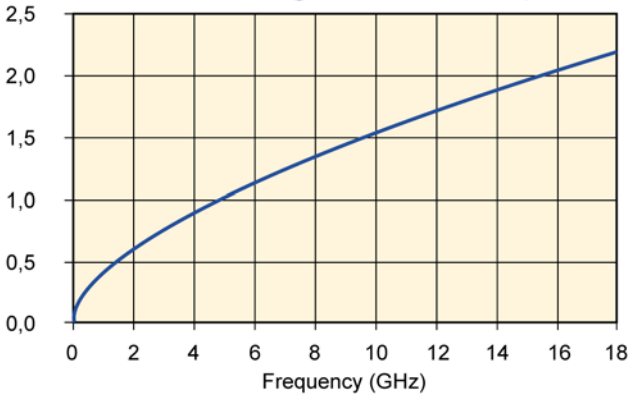
Centre conductor . . . . . silver-plated copper-clad steel wire
Centre conductor OD. 0.94mm
Dielectric . . . . . solid extruded PTFE
Dielectric OD. 2.95mm
Outer conductor . . . tin-soaked copper braid, Coverage 100%
Outer conductor OD. 3,6mm
Jacket. . . . . none
Weight, nominal 44kg/km
Operating temperature. . . . . -40 to +165°C

Electrical data

Impedance. . . . . 50 Ohms
Capacitance . . . . . 94 pF/m
Velocity of signal propagation 70%
Signal delay . . . . . 4,8 ns/m
Working voltage, maximum. . . . . 2500V RMS
Attenuation, nominal. . . . . see graph right
Power, nominal. . . . . see graph right
Suitable for frequencies . . . . . up to 20 GHz
Shielding effectiveness . . . . . typically <-130 dB/m

Cable Attenuation

Nominal values @ +25°C ambient temperature

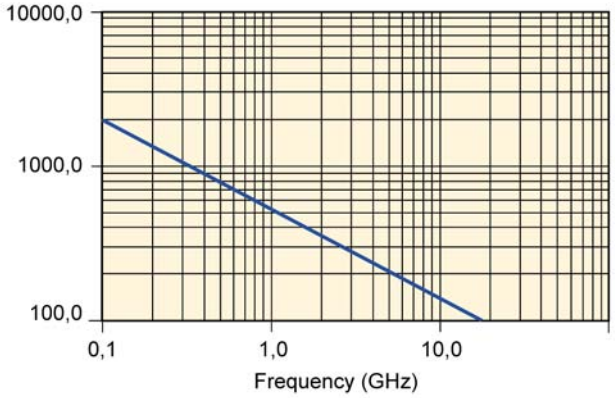


General data

Flammability, passes. . . . . IEC 60 332-3
Minimum bend radius
single bend 10mm
multiple bends. 40mm

Average Power

Ambient temperature 40°C at sea level & VSWR1.0



Connectors

Connector. . . . . as semi-rigid M17/130-RG402

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MILITARY CABLES
RG402S

Electrical Data				
Impedance (Ohms)	50 +/- 1.0		50 +/- 1.0	
Dielectric Strength (KVRMS 60 Hz)	5.0		5.0	
Corona Extinction (KVRMS 60 Hz)	1.9 Min.		1.9 Min.	
Max Operating Frequency (GHz)	36		36	
Max. Attenuation, db/100ft. at 20° C and Avg. Pwr., Watts, unity VSWR, 40° C amb., still air				
Frequency (GHz)	**Atten.**	**Avg. Pwr.**	**Atten.**	**Avg. Pwr.**
1.0	12.0	450.0	12.0	450.0
10.0	45.0	120.0	45.0	120.0
20.0	70.0	70.0	70.0	70.0
Mechanical Data				
Inner Conductor O.D. (inches)	.0362 +/- .0007		.0362 +/- .0007	
Inner Conductor Material	SPCW		SPCW	
Inner Dielectric Material	PTFE,F1		PTFE,F1	
Dielectric O.D. (inches)	.1175 +/- .001		.1175 +/- .001	
Outer Conductor O.D. (inches)	.141 +/- .001		.141 +.002 -.001	
Outer Conductor Material	Copper		Copper/Tin	
Safe Bend Radius (proper tooling) (inch)	0.100		0.100	
Max. Weight (Lbs./1000ft.)	34.4		35.1	
Operating Temperature Max. Degrees C	-55/ +125		-55/ +125	

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RoHS

Flexiform 405 NM
RG405

SPECIFICATIONS:

Flexiform® 405 NM

Re-formable coaxial cable

Features & Benefits:

Reformable alternative to semi-rigid coaxial cables

Offers the unique ability to be hand-formed, no special tools required

Outstanding shielding properties

Fluoropolymer jacket (FJ), halogen free jacket (HFJ) and alternative colours also available

Magnetic conductors also available

Construction:		Ø	Ø
Flexiform 405 NM		(in)	(mm)
Conductor	Silver plated copper (1x0,56)	0.022	0,56
Dielectric	Solid extruded PTFE	0.066	1,70
Braid	Tin-soaked tin plated copper	0.086	2,20
Weight	15 kg/km		
Operating temperature	-40 / +165°C		
Order reference:	31000-405-03		
Flexiform 405 NM FJ			
Jacket	FPI 205, Blue	0.102	2,60
Weight	18 kg/km		
Operating temperature	-40 / +165°C		
Order reference:	31000-405-04		
Flexiform 405 NM HFJ			
Jacket	HFS 80, Blue	0.125	3,20
Weight	21 kg/km		
Operating temperature	-25 / +80°C		
Order reference:	31000-405-05		

Flexiform 405 NM:

Flexiform 405 NM FJ:

Flexiform 405 NM HFJ:

Electrical:	
Impedance	50 ± 2 Ohms
Capacitance	nom 94 pF/m
Velocity of signal propagation	70%
Signal delay	4.8 ns/m
Working voltage, AC r.m.s.	1500 max
Working voltage, DC	3000 max
Attenuation, typical values (nominal values at an air temperature of +20°C)	see table
Power, typical values (ambient temperature of 40°C at sea level and VSWR 1.0)	see table
Suitable for frequencies	up to 18 GHz
Shielding effectiveness	typically <-130dB/m
Environmental & Mechanical:	
Minimum bend radius (MBR) single bend (installation)	single bend: 6mm
Minimum bend radius (MBR) dynamic use	multiple bends: 25mm
Flame resistance	passes IEC 60332-3-24
Flammability	UL 94 V-0
Connectors	As semi-rigid M17/133-RG 405

Attenuation:

(MHz)	(dB/100m)
400	43
1000	70
1800	97
2000	102
2400	113
3000	127
5000	172
10000	249
18000	346

Average Power:

(MHz)	W
400	253
1000	157
1800	116
2000	110
2400	100
3000	89
5000	69
10000	47
18000	33

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RoHS

Harbour SFL402 & 405 CABLE

SFL402 & 405

SPECIFICATIONS:

SFL (Spiral Flex™) Coaxial Cable

Construction:
Center conductor: Stranded silver plated copper or copperweld
Dielectric: Solid PTFE
Inner shield: Spiral strip of silver plated copper
Outer braid: Round silver plated copper
Jacket: Solid light blue polyurethane

Operating temperature: -55 +85° C
Velocity of Propagation: 70%
Shielding Effectiveness: <-110 dB

	SFL402	SFL405
Center conductor	SPC	SPCW
Center conductor diameter	.0376″ (7/28)	.0210″ (7/33)
Dielectric diameter	.117″	.063″
Diameter over inner shield	.124″	.071″
Diameter over outer braid	.138″	.085″
Overall diameter	.180″	.115″
Weights (lbs/mft)	29	14
Bend radius	0.9″	0.6″
Impedance (Ohms)	50	50
Capacitance (pF/ft)	29.4	29.4
Attenuation (dB/100ft)@	**Typ/Max**	**Typ/Max**
400 MHz	7.4 / 9.0	13.1 / 14.8
1 GHz	11.9 / 14.5	21.5 / 23.7
2 GHz	18.0 / 21.9	30.8 / 35.4
2.4 GHz	20.0 / 23.3	34.0 / 39.1
3 GHz	21.0 / 24.1	38.2 / 47.9
5 GHz	28.5 / 32.8	50.6 / 58.2
10 GHz	43.7 / 50.0	75.1 / 86.4
18 GHz	64.0 / 73.5	106.1 / 113.9
Cut-off frequency GHz	34.0	63.0

Additional constructions available - check with the factory for details
All figures referenced are nominal

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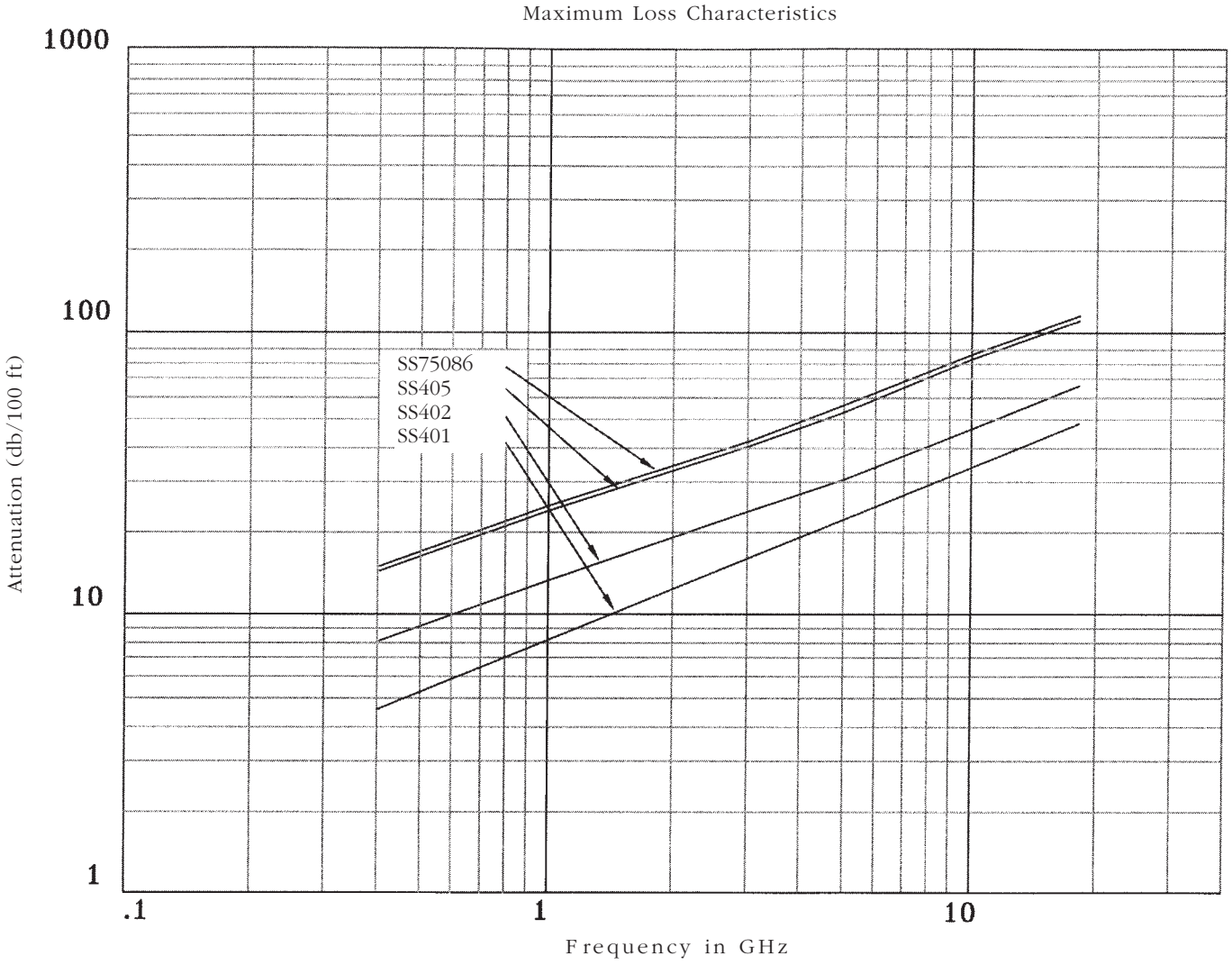
SS (Spiral Strip) Coaxial Cable

Harbour's SS coaxial cables are flexible alternatives to semi-rigid coax, and the unique shielding configuration offers a cost effective, low attenuation option. The silver plated copper strip/braid composite shields effect low transfer impedance levels. The 50 ohm constructions exhibit the same attenuation characteristics as the M17/130-RG402 and M17/133-RG405 cables. All SS cables have VSWR characteristics that meet or exceed similar size flexible constructions.

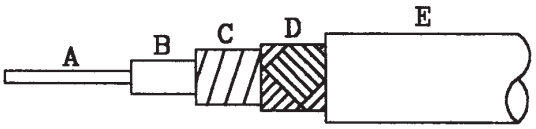
SS402 and SS405 have been designed with diameters over the outer braids of .141" and .086" respectively, so standard SMA connectors may be used. High strength versions of Harbour's SS coaxial cables, SS402-HS and SS405-HS, may be used in applications where bending of the cables occurs close to the connectors. An outer silver plated copperweld braid improves conductor breakage that may be associated with the use of solder in termination. Harbour can provide termination techniques to ensure system reliability.

An overall FEP jacket is resistant to oil and chemicals, and the cable is surface printed eliminating a marker tape that may cause problems in termination. Without the marker tape, an improved level of adhesion exists between the braided core and the jacket that allows ease of termination with short length assemblies.



SS Series Coaxial Cable

- spiral strip shield
- same attenuation as semi-rigid coax



A. Center conductor - solid silver plated copperweld
B. Dielectric - solid PTFE
C. Inner shield - spiral strip of silver plated copper
D. Outer shield - round wire silver plated copper braid
or silver plated copper clad steel (-HS) braid
E. Jacket - blue FEP with surface print

	SS401	SS402	SS402-HS	SS405	SS405-HS	SS75086
Physical Characteristics						
A. Center conductor diameter	.064"	.037"	.037"	.0201"	.0201"	.0113"
B. Dielectric diameter	.209"	.117"	.117"	.064"	.064"	.064"
C. Inner shield diameter	.217"	.128"	.128"	.071"	.071"	.074"
D. Outer shield diameter	.250"	.141"	.141"	.086"	.086"	.086"
E. Overall diameter	.275"	.163"	.163"	.104"	.104"	.100"
Weight (lbs./MFT)	93	32	32	14	14	14
Operating temperature range (˚C.)	-55 +200	-55 +200	-55 +200	-55 +200	-55 +200	-55 +200
Minimum recommended bend radius	1.4"	0.8"	0.8"	0.5"	0.5"	0.5"
Electrical Characteristics						
Impedance (ohms)	50	50	50	50	50	75
Capacitance (pf/ft)	29.4	29.4	29.4	29.4	29.4	19.5
Velocity of propagation (%)	69.4	69.4	69.4	69.4	69.4	69.4
Maximum attenuation (db/100 ft.)						
@ 400 MHz	4.5	8.0	8.0	14.0	14.0	14.7
1 GHz	7.5	13.0	13.0	23.0	23.0	24.0
3 GHz	16.0	23.0	23.0	39.0	39.0	41.0
5 GHz	22.0	30.0	30.0	52.0	52.0	55.0
10 GHz	33.0	45.0	45.0	80.0	80.0	84.0
18 GHz	48.0	64.0	64.0	110.0	110.0	115.0
Cut-off frequency (GHz)	20	34	34	63	63	72
Shielding effectiveness*	-110 dB	-110 dB	-110 dB	-110 dB	-110 dB	-110 dB

(All figures referenced above are nominal unless otherwise specified.)

*reference Harbour's "Shielding Effectiveness Test Method" dated 9/3/96

Harbour INDUSTRIES

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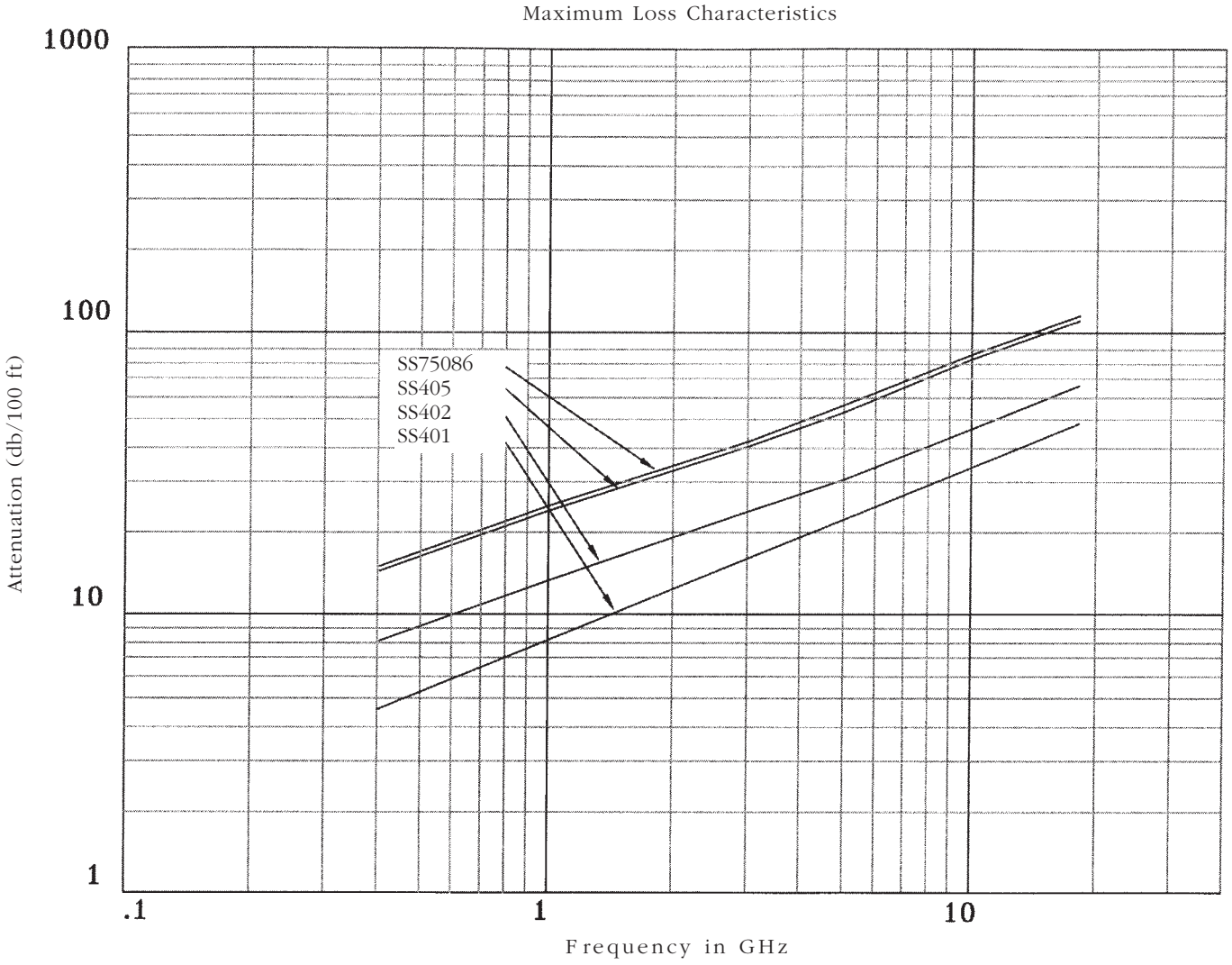

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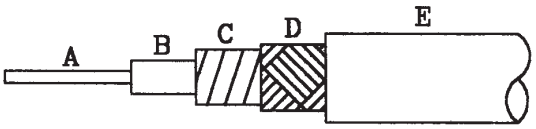

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D. Outer shield diameter	.250"	.141"	.141"	.086"	.086"	.086"
E. Overall diameter	.275"	.163"	.163"	.104"	.104"	.100"
Weight (lbs./MFT)	93	32	32	14	14	14
Operating temperature range (˚C.)	-55 +200	-55 +200	-55 +200	-55 +200	-55 +200	-55 +200
Minimum recommended bend radius	1.4"	0.8"	0.8"	0.5"	0.5"	0.5"
Electrical Characteristics						
Impedance (ohms)	50	50	50	50	50	75
Capacitance (pf/ft)	29.4	29.4	29.4	29.4	29.4	19.5
Velocity of propagation (%)	69.4	69.4	69.4	69.4	69.4	69.4
Maximum attenuation (db/100 ft.)						
@ 400 MHz	4.5	8.0	8.0	14.0	14.0	14.7
1 GHz	7.5	13.0	13.0	23.0	23.0	24.0
3 GHz	16.0	23.0	23.0	39.0	39.0	41.0
5 GHz	22.0	30.0	30.0	52.0	52.0	55.0
10 GHz	33.0	45.0	45.0	80.0	80.0	84.0
18 GHz	48.0	64.0	64.0	110.0	110.0	115.0
Cut-off frequency (GHz)	20	34	34	63	63	72
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