PRODUCT DATASHEET

HCA158-50JM

1-5/8" Air-Dielectric Coaxial Cable, 50 ohm, Low Loss and High Power Rating

RFS Technologies' air dielectric cables are air filled coaxial cables which consist of an inner conductor and an outer conductor. A dielectric helix is used to center the inner conductor to the outer conductor. Air dielectric cables have low attenuation and high power rating which make them perfect choice of high RF power transmission lines, such as in FM, TV and radar systems and networks. Air cables also have better flexibility and crush resistance than other solutions such as rigid lines.

1-5/8" Air Dielectric Coaxial Cable

FEATURES / BENEFITS

- **Low Attenuation**
  The low attenuation of this coaxial cable results in highly efficient signal transfer in your RF system.
- **Complete Shielding**
  The solid outer conductor of this coaxial cable creates a continuous RFI/EMI shield that minimizes system interference.
- **Low VSWR**
  Standard and low VSWR versions of this coaxial cables contribute to low system noise.
- **Outstanding Intermodulation Performance**
  Coaxial cable's solid inner and outer conductors virtually eliminate intermods. Intermodulation performance is also guaranteed by the state-of-the-art manufacturing process at the factory.
- **High Power Rating**
  Low attenuation, outstanding heat transfer properties and temperature stabilized dielectric materials enable cable to provide long operating life at high transmit power levels.
- **Wide Range of Application**
  Air cables are good choices for telecom, broadcasting, radar and HF defense applications.
- **Reinforced Jacket to Sustain Outdoor Applications**
  Polyethylene is proven to be strong and reliable even in extreme environmental conditions.

Technical features

APPLICATIONS

Applications		Wireless Communication	TV & Radio	HF Defense	Mobile Radio	Cable Solutions

STRUCTURE

Size		1-5/8 inch
Jacket Option		Black
Inner Conductor Diameter	mm (in)	18.6 (0.73)
Inner Conductor Material		Corrugated Copper Tube
Dielectric Diameter	mm (in)	39.8 (1.56)
Dielectric Material		Helical Polyethylene Spacer
Outer Conductor Diameter	mm (in)	46.6 (1.83)
Outer Conductor Material		Corrugated Copper
Jacket Diameter	mm (in)	50.4 (1.984)
Jacket Material		PE (Polyethylene), Medium Density
Cable Type		Air-Dielectric, Corrugated

TESTING AND ENVIRONMENTAL

Fire Performance		Halogene Free
Flame Retardant Jacket Specifications		Meets the requirements according to: IEC60754-1, IEC6-754-2
Installation Temperature	°C(°F)	-40 to 60 (-40 to 140)
Storage Temperature	°C (°F)	-70 to 85 (-94 to 185)
Operation Temperature	°C(°F)	-50 to 85 (-58 to 185)

ELECTRICAL SPECIFICATIONS

Impedance	Ω	50 +/- 0.5
Maximum Frequency	GHz	3
Velocity	%	95
Capacitance	pF/m (pF/ft)	70 (21.3)
Inductance	uH/m (uH/ft)	0.175 (0.053)
Peak Power Rating	kW	270
RF Peak Voltage	Volts	5200
Jacket Spark	Volt RMS	8000
Inner Conductor dc Resistance	Ω/1000 m (Ω/1000 ft)	1.06 (0.33)
Outer Conductor dc Resistance	Ω/1000 m (Ω/1000 ft)	0.34 (0.11)
Return Loss (VSWR) Performance		Typical 20.8dB (1.2 VSWR) or better within the operation bands of most global frequency ranges. Premium also available. Contact factory for options in your specific frequency band.
Phase Stabilized		Phase stabilizing, phase matching, and connector assembly services are available upon request.
Temperature & Power		Standard

MECHANICAL SPECIFICATIONS

Cable Weight, Nominal	kg/m (lb/ft)	1.33 (0.89)
Minimum Bending Radius, Single Bend	mm (in)	180 (7)
Minimum Bending Radius, Repeated Bends	mm (in)	550 (22)
Bending Moment	Nm (lb-ft)	42 (31)
Tensile Strength	N (lb)	1500 (337)
Recommended / Maximum Clamp Spacing	m (ft)	0.8 / 1.2 (2.75 / 4)

ATTENUATION @ 20°C (68°F) AND POWER RATING @ 40°C (104°F)

Frequency, MHz	dB per 100m	dB per 100ft	Power, kW
0.5	0.04	0.01	270
1	0.06	0.02	196
1.5	0.08	0.02	160
2	0.09	0.03	138
10	0.20	0.06	61.40
20	0.28	0.09	43.40
30	0.34	0.10	35.40
50	0.44	0.14	27.30
88	0.59	0.18	20.50
100	0.63	0.19	19.20
108	0.66	0.20	18.40
150	0.78	0.24	15.60
174	0.84	0.26	14.40
200	0.90	0.28	13.50
300	1.11	0.34	11
400	1.29	0.39	9.44
450	1.38	0.42	8.83
500	1.45	0.44	8.41
512	1.47	0.45	8.30
600	1.60	0.49	7.64
700	1.74	0.53	7.03
800	1.86	0.57	6.59
824	1.89	0.58	6.49
894	1.98	0.60	6.20
900	1.98	0.61	6.20
925	2.01	0.61	6.11
960	2.05	0.63	6
1000	2.10	0.64	5.86
1250	2.37	0.72	5.21
1500	2.61	0.80	4.75
1700	2.80	0.85	4.44
1800	2.89	0.88	4.31
2000	3.06	0.93	4.08
2200	3.22	0.98	3.89
2300	3.30	1.01	3.81
3000	3.83	1.17	3.32

External Document Links	Notes