

- RADIAFLEX® functions as a distributed antenna to provide communications in tunnels, mines and large building complexes and is the solution for any application in confined areas.
- Slots in the copper outer conductor allow a controlled portion of the internal RF energy to be radiated into the surrounding environment. Conversely, a signal transmitted near the cable will couple into the slots and be carried along the cable length.
- RADIAFLEX® is used for both one-way and two-way communication systems and because of its broadband capability, a single radiating cable can handle multiple communication systems simultaneously.
- This RADIAFLEX® radiating cable utilize a low-loss cellular polyethylene foam dielectric and a smooth copper outer conductor which offers a superior electrical performance together with good bending properties.

## FEATURES / BENEFITS

- Broadband from 30 MHz to 1000 MHz
- Optimized for high frequencies and digital transmission
- Low coupling loss variation
- For tunnel applications



RAY cable, A-series

# Technical features

GENERAL SPECIFICATIONS					
Size		1-5/8			
ELECTRICAL SPECIFICATIONS					
Max. Operating Frequency	MHz	1000			
Cable Type		RAY			
Impedance	Ohm	50 +/- 2			
Velocity, percent	%	90			
Capacitance	pF/m (pF/ft)	73 (23.2)			
Inductance, uH/m (uH/ft)	μH/m (μH/ft)	0.19 (0.058)			
DC-resistance inner conductor, ohm/km (ohm/1000ft)	Ω/km (Ω/1000ft)	1.62 (0.49)			
DC-resistance outer conductor, ohm/km (ohm/1000ft)	Ω/km (Ω/1000ft)	1.47 (0.45)			
Stop bands	MHz	240-300, 500-590, 750-860			
Frequency Selection	MHz	600, 900			

RAY158-50JFNA REV: P2 REV DATE: 21 May 2024 www.rfsworld.com



MECHANICAL SPECIFICATIONS					
Jacket		JFN			
Jacket Description		Halogen free, non corrosive, flame and fire retardant, low smoke, polyolefin			
Slot Design		Groups of slope slots at short intervals			
Inner Conductor Material		Corrugated Copper Tube			
Outer Conductor Material		Overlapping Copper Strip			
Diameter Inner Conductor	mm (in)	17.6 (0.69)			
Diameter Outer Conductor	mm (in)	44.2 (1.74)			
Diameter over Jacket Nominal	mm (in)	48.2 (1.9)			
Minimum Bending Radius, Single Bend	mm (in)	700 (28)			
Cable Weight	kg/m (lb/ft)	1.01 (0.68)			
Tensile Force	N (lb)	1200 (270)			
Indication of Slot Alignment		Guides opposite to slots			
Recommended / Maximum Clamp Spacing	m (ft)	1.5 (5)			
Minimum Distance to Wall	mm (in)	80 (3.15)			

## **TESTING AND ENVIRONMENTAL**

Jacket Testing Methods	Test methods for fire behaviour of cable : IEC 60754-1/-2 smoke emission: halogen free, non corrosive IEC 61034 low smoke IEC 60332-1 flame retardant
	IEC 60332-1 Hame retardant  IEC 60332-3-24 fire retardant  UL1666, ASTM E 662, NES711 and NES713

# **TEMPERATURE SPECIFICATIONS**

Storage Temperature	°C(°F)	-70 to 85 (-94 to 185 )
Installation Temperature	°C(°F)	-25 to 60 (-13 to 140 )
Operation Temperature	°C(°F)	-40 to 85 (-40 to 185 )

# ATTENUATION AND POWER RATING

Frequency, MHz	Longitudinal Loss, dB/100 m (dB/100 ft)	Coupling Loss 50%, dB	Coupling Loss 95%, dB
75	0,56 (0,17)	62 (65)	72 (75)
150	0,78 (0,24)	69 (72)	80 (83)
450	1,51 (0,46)	64 (67)	69 (72)
870	2,85 (0,87)	59 (62)	63 (66)
900	3,04 (0,93)	59 (62)	63 (66)
960	3,38 (1,03)	58 (60)	61 (66)



RAY158-50JFNA REV : P2 REV DATE : 21 May 2024 www.rfsworld.com



## External Document Links

#### Notes

- Coupling loss as well as longitudinal attenuation of RADIAFLEX® cables are measured by the free space method according to IEC 61196-4.
- Coupling loss values are measured with a radial (below 300 MHz) or orthogonal (above 300 MHz) orientated dipole antenna.
- The coupling loss values given in brackets are average values of all three spatial orientations (radial, parallel and orthogonal) of dipole antenna.
- Coupling loss values are given with a tolerance of +5 dB and longitudinal loss values with a tolerance of +5%. Note: Measured values below nominal are better. They are not limited by any tolerance-range.
- In case of a conflict of operational and stop band, please contact RFS for further assistance.
- As with any radiating cable, the performance in building or tunnel environments may deviate from figures based on free space method.

RAY158-50JFNA REV : P2 REV DATE : 21 May 2024 www.rfsworld.com