



GORE® Aerospace

HIGH SPEED DATA CABLES

**For Military
Applications**

Reliable signal transmission in high-density, lightweight constructions

Engineered for demanding aerospace environments, GORE® Aerospace High Speed Data Cables are constructed with uniquely engineered fluoropolymers that deliver reliable signal transmission in a lightweight package. These cables meet the performance requirements of ANSI/NEMA WC 27500 Standard for Aerospace and Industrial Electrical Cable, Type 24. Whether your system architecture requires Ethernet, FireWire, or shielded twisted pair cables, GORE® Aerospace High Speed Data Cables maintain stable communication on avionics networks.

WEIGHT SAVINGS WITH GORE CABLE TECHNOLOGY

GORE® Aerospace High Speed Data Cables can significantly reduce weight while maintaining reliable signal integrity. Jacket weight is reduced by as much as 37 percent when compared to ethylene tetrafluoroethylene (ETFE) materials and 50 percent when compared to fluorinated ethylene propylene (FEP). These lighter-weight materials also result in smaller cable diameters, which ultimately translate to significantly smaller, lighter, and higher-density cable bundles.

The excellent signal integrity of GORE® Aerospace High Speed Data Cables can enable utilization of smaller gauge cables in your system architecture. Because of their electrical performance and long transmission distances, these cables can reduce the need for additional signal amplification — further decreasing weight and power requirements.

RELIABLE FLIGHT PERFORMANCE

GORE® Aerospace High Speed Data Cables deliver dependable signal integrity for data transmission in demanding aerospace environments. These cables maintain reliable performance in extreme temperatures ranging from -55°C to 200°C, including rapid changes in temperatures encountered during take-off and landing.

EASIER INSTALLATION

GORE® Aerospace High Speed Data Cables facilitate easier installation. The small cable diameter increases flexibility with a tight bend radius, which makes initial routing easier.



Benefits of GORE® Aerospace High Speed Cables

- Excellent signal integrity with stable performance in extreme conditions
- High-speed data transmission over longer distances, minimizing the need for additional signal amplification
- Improved installation with smaller, high-density cable bundles
- Easy routing in confined spaces due to small diameter and tight bend radius



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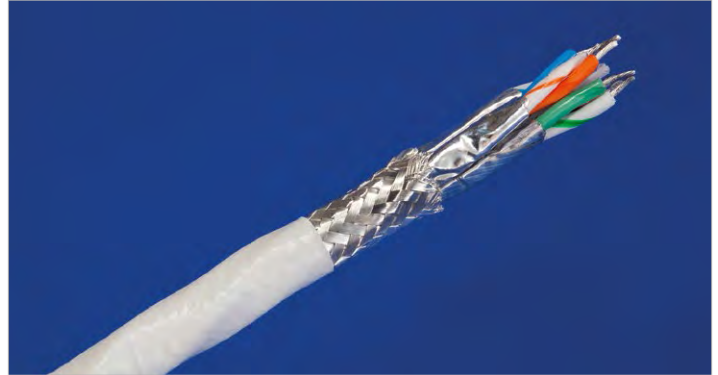
GORE® AEROSPACE ETHERNET CABLES

GORE® Aerospace Ethernet Cables are engineered for the increasing data demands of modern airborne digital networks (Figure 1). They exceed Cat6a electrical requirements and deliver reliable signal integrity with sufficient margin for high-speed data transmission up to 10 gigabits over longer distances (Table 1). The unique design of these cables is 24 percent smaller and 25 percent lighter than standard Cat6a cables for greater flexibility and easier installation in challenging environments (Figures 2 and 3). Gore's engineered fluoropolymer materials enable this cable (26 AWG) to fit into a size 8 contact.

TYPICAL APPLICATIONS

- Digital video systems
- Avionics networks
- Cabin management systems
- Flight management systems
- Ethernet backbone
- In-flight entertainment systems

FIGURE 1: GORE® AEROSPACE ETHERNET CABLES



STANDARDS COMPLIANCE

- ANSI/NEMA WC 27500 Performance Requirements: Environmental Testing, Jacket and Marking
- IEEE 802.3 1000BASE-T Gigabit Ethernet Cables: Ethernet Standard
- AS4373 Test Methods for Insulated Electric Wire

TABLE 1: CABLE PROPERTIES

	Property	Value
ELECTRICAL PROPERTIES	Standard Impedance (ohms)	100 ±10
	Voltage Rating (V)	500
	Velocity of Propagation (nominal) (%)	80
	Time Delay (nominal) [ns/m (ns/ft)] 24 AWG	4.10 (1.25)
	Capacitance [pF/m (pF/ft)]	42.6 (13)
	Dielectric Withstanding Voltage (Vrms) Conductor-to-Conductor Conductor-to-Shield	1500 1000
MECH/ENVIRONMENTAL PROPERTIES	Jacket Material	Engineered Fluoropolymer
	Jacket Color	White
	Conductor	Silver-Plated Copper
	Conductor Color-Coding	Solid Blue/White with Blue Stripe Solid Orange/White with Orange Stripe Solid Green/White with Green Stripe Solid Brown/White with Brown Stripe
	Dielectric Material	ePTFE/PTFE
	Temperature Range (°C)	-55 to 200

FIGURE 2: SMALLER CAT6A CABLE DIAMETER

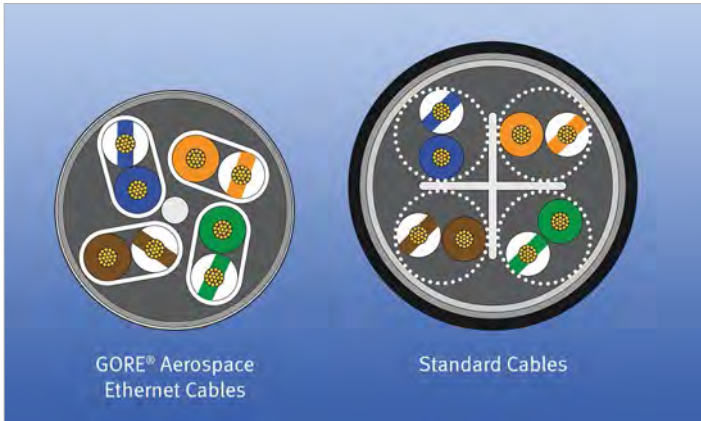


FIGURE 3: HIGH-DENSITY CONSTRUCTION OF GORE® AEROSPACE ETHERNET CABLES

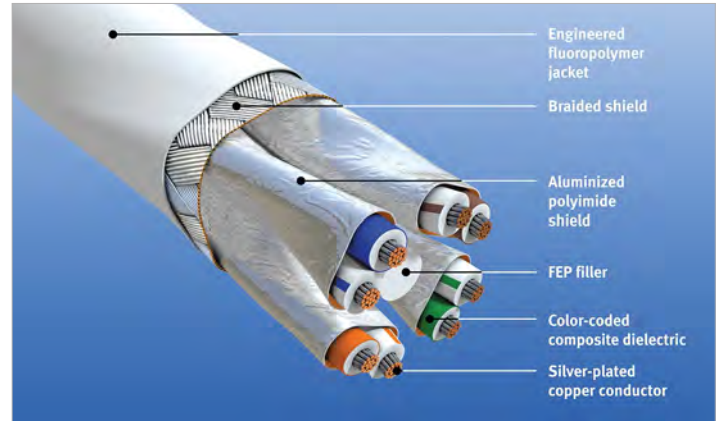


FIGURE 4: ATTENUATION COMPARISON

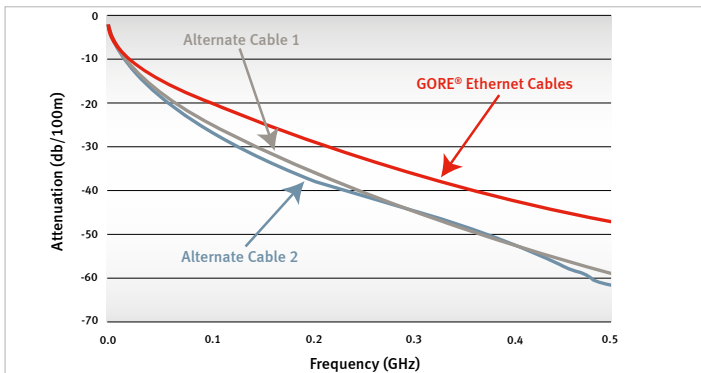
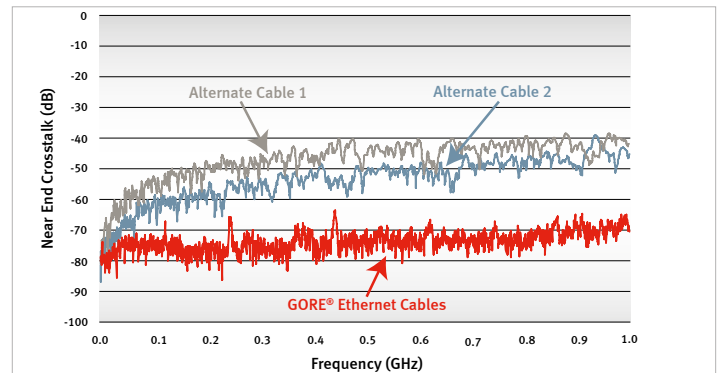


FIGURE 5: NEXT COMPARISON



RELIABLE SIGNAL INTEGRITY

Gore compared its Cat6a cable with several alternative cables. Results showed that GORE® Aerospace Ethernet Cables provided enhanced electrical performance with lower signal attenuation by as much as 10 dB/100 m at 500 MHz (Figure 4). Results also showed that GORE® Aerospace Ethernet Cables can reduce near-end crosstalk (NEXT) by as much as 10 dB at 500 MHz compared to alternative cable designs (Figure 5).

ORDERING INFORMATION

GORE® Aerospace Ethernet Cables are available through several global distributors in a variety of standard sizes (Table 2). Visit gore.com/cable-distributors for the list of distributors.

Gore also offers custom cables and terminated assemblies. For information about Gore's customized cables and assemblies, please contact a Gore representative.

TABLE 2: PRODUCT SPECIFICATIONS

Part Number	AWG Size	Nominal Outer Diameter mm (in)	Minimum Bend Radius mm (in)	Nominal Weight kg/km (lbs/1000 ft)	Typical Attenuation		
					100 MHz	200 MHz	500 MHz
RCN9034-24	24 (19/36)	6.6 (0.26)	13.7 (0.54)	67 (45)	19.1	27.6	45.3
RCN9047-26	26 (19/38)	5.6 (0.22)	10.2 (0.44)	52 (35)	19.1	27.6	45.3



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GORE® SHIELDED TWISTED PAIR CABLES

Well-suited for aerospace harness applications, GORE® Shielded Twisted Pair Cables are highly flexible and easy to route in confined spaces (Figure 6). These cables provide excellent signal integrity while reducing weight by as much as 35% when compared to standard cables (Figure 7). In addition, the combination of materials in this construction supports a wide temperature range to meet the most demanding aerospace environments (Figure 8). GORE® Shielded Twisted Pair Cables are available in six standard sizes ranging from 20 AWG to 30 AWG (Table 3).

TYPICAL APPLICATIONS

- Avionics electronics
- Digital video systems
- Cabin management systems
- Ethernet networks
- Serial buses

FIGURE 6: GORE® SHIELDED TWISTED PAIR CABLES



STANDARDS COMPLIANCE

- ANSI/NEMA WC 27500 Performance Requirements: Environmental Testing, Jacket and Marking
- FAR Part 25, Appendix F, Part I and MIL-W-22759: Flammability
- FAR Part 25, Appendix F, Part V: Smoke Density

TABLE 3: CABLE PROPERTIES

	Property	Value
ELECTRICAL PROPERTIES	Standard Impedance* (ohms)	100 ±10
	Voltage Rating (V)	500
	Velocity of Propagation (nominal) (%)	80
	Time Delay (nominal) [ns/m (ns/ft)] 24 AWG	4.07 (1.24)
	Capacitance [pF/m (pF/ft)]	42.6 (13)
	Dielectric Withstanding Voltage (Vrms) Conductor-to-Conductor Conductor-to-Shield	1500 1000
MECH/ENVIRONMENTAL PROPERTIES	Jacket Material	Engineered Fluoropolymer
	Jacket Color	White
	Conductor	Silver-Plated Copper
	Conductor Color-Coding	White and Blue
	Dielectric Material	ePTFE/PTFE
	Temperature Range (°C)	-55 to 200

*Contact Gore for other impedance options

FIGURE 7: SMALLER, LIGHTER CABLE DESIGN

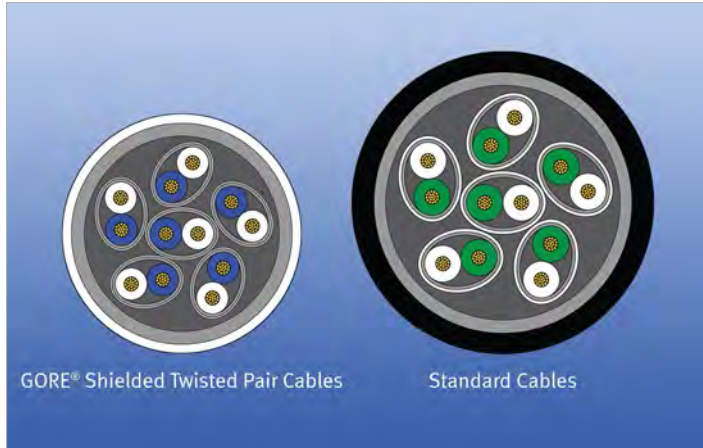
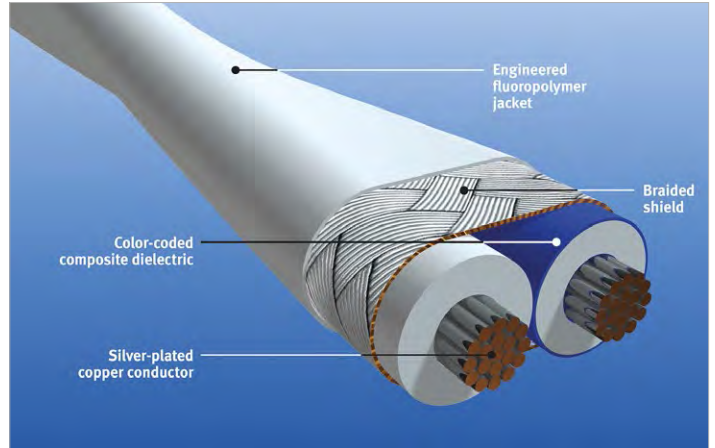


FIGURE 8: DURABLE CONSTRUCTION OF GORE® SHIELDED TWISTED PAIR CABLES



ORDERING INFORMATION

GORE® Shielded Twisted Pair Cables are available through several global distributors in a variety of standard sizes (Table 4). Visit gore.com/cable-distributors for the list of distributors.

Gore also offers custom cables and terminated assemblies. For information about Gore's customized cables and assemblies, please contact a Gore representative.

TABLE 4: PRODUCT SPECIFICATIONS

Part Number	AWG Size	Nominal Outer Diameter Major mm (in)	Nominal Outer Diameter Minor mm (in)	Minimum Bend Radius mm (in)	Nominal Weight kg/km (lbs/1000 ft)	Typical Attenuation dB/30 m (dB/100 ft)			
						100 MHz	200 MHz	500 MHz	1 GHz
DXN2600	20 (19/32)	5.0 (0.20)	3.68 (0.15)	25 (0.98)	31.7 (21.3)	4.8	6.8	11.3	16.4
DXN2601	22 (19/34)	3.81 (0.15)	2.79 (0.11)	19.1 (0.75)	23.2 (15.6)	6.6	9.8	15.7	23.5
DXN2602	24 (19/36)	3.23 (0.13)	2.3 (0.09)	16.2 (0.64)	16.8 (11.3)	7.6	10.7	17.3	25.0
DXN2603	26 (19/38)	2.52 (0.10)	2.1 (0.08)	12.6 (0.49)	12.8 (8.6)	9.4	13.8	21.5	31.2
DXN2604	28 (19/40)	1.98 (0.08)	1.8 (0.07)	9.9 (0.39)	8.6 (5.8)	13.2	19.2	32.0	46.8
DXN2605	30 (19/42)	1.78 (0.07)	1.52 (0.06)	8.9 (0.35)	7.1 (4.8)	20.9	23.6	38.3	56.9



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GORE® AEROSPACE FIREWIRE® CABLES

GORE® Aerospace FireWire® Cables are the premier solution for copper-based 1394b FireWire data links (Figure 9). These cables provide high-fidelity signal links for interconnect solutions up to 75 feet at S400 data rates (Table 5). Gore's unique design offers significant size and weight savings when compared to conventional constructions such as twisted pair cables (Figure 10). This quad design is approximately 40 percent smaller than common dual twisted pair constructions and has saved as much as 11.5 pounds per aircraft (Figure 11). GORE® Aerospace FireWire® Cables are available in five standard sizes ranging from 22 AWG to 30 AWG.

TYPICAL APPLICATIONS

- Flight control
- Mission systems
- Propulsion control

FIGURE 9: GORE® AEROSPACE FIREWIRE® CABLES



STANDARDS COMPLIANCE

- ANSI/NEMA WC 27500 Performance Requirements: Environmental Testing, Jacket and Marking
- BSS-7239: Toxicity
- FAR Part 25, Appendix F, Part I and MIL-W-22759: Flammability
- FAR Part 25, Appendix F, Part V: Smoke Density
- MIL-STD-461: Electromagnetic Compatibility
- RTCA/DO-160D: Lightning Strike
- SAE-AS-5643: IEEE 1394b Interface Requirements for Military and Aerospace Vehicle Applications

TABLE 5: CABLE PROPERTIES

	Property	Value
ELECTRICAL PROPERTIES	Standard Impedance (ohms)	110 +6/-4
	Voltage Rating (V)	500
	Velocity of Propagation (nominal) (%)	80
	Time Delay (nominal) [ns/m (ns/ft)] 24 AWG	4.10 (1.25)
	Capacitance [pF/m (pF/ft)]	39.4 (12)
	Skew (ps/ft) (within pair) Typical Maximum	2.0 3.5
	Dielectric Withstanding Voltage (Vrms) Conductor-to-Conductor Conductor-to-Shield	1500 1000
MECH/ENV PROPERTIES	Jacket Material	Engineered Fluoropolymer
	Jacket Color	White
	Conductor	Silver-Plated Copper
	Conductor Color-Coding	Blue/Orange Red/Green
MECH/ENV PROPERTIES	Dielectric Material	ePTFE/PTFE
	Temperature Range (°C)	-55 to 200

FIGURE 10: ROBUST CONSTRUCTION OF GORE® AEROSPACE FIREWIRE® CABLES

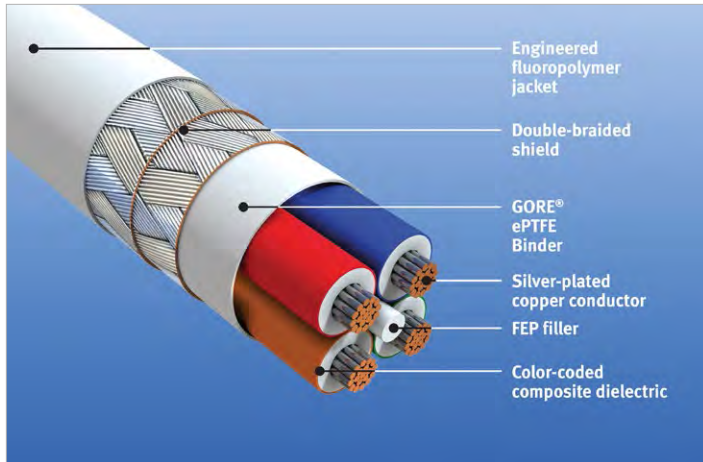
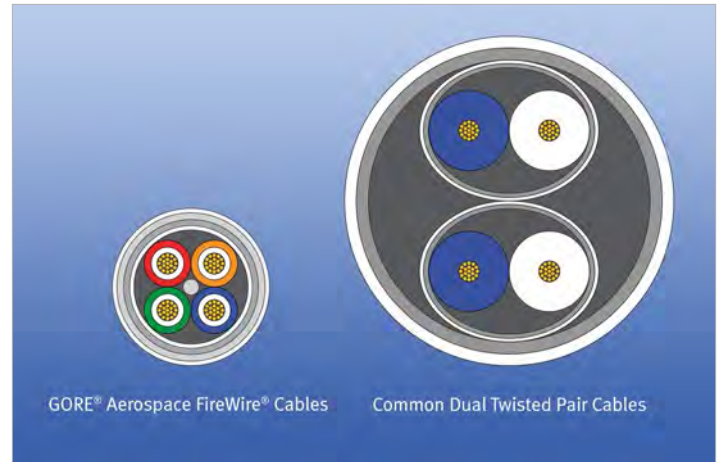


FIGURE 11: SMALLER QUAD CABLE DIAMETER



SIGNAL INTEGRITY WITH FLEXURE

To ensure signal integrity with flexure of GORE® Aerospace FireWire® Cables, the eye pattern of a 50-ft cable transmitting 500 Mbps of data was evaluated before and during flexure. The diamond-shaped eye mask indicates the minimum receiver sensitivity as specified by IEEE 1394b (Figure 12).

The cable passed the eye mask test with margin, indicating greater transmission length is possible. The eye pattern test was repeated with the 50-ft cable wrapped 20 times around a 0.5-inch radius mandrel. No substantial degradation in signal quality was observed with flexure (Figure 13).

FIGURE 12: EYE PATTERN OF 24 AWG

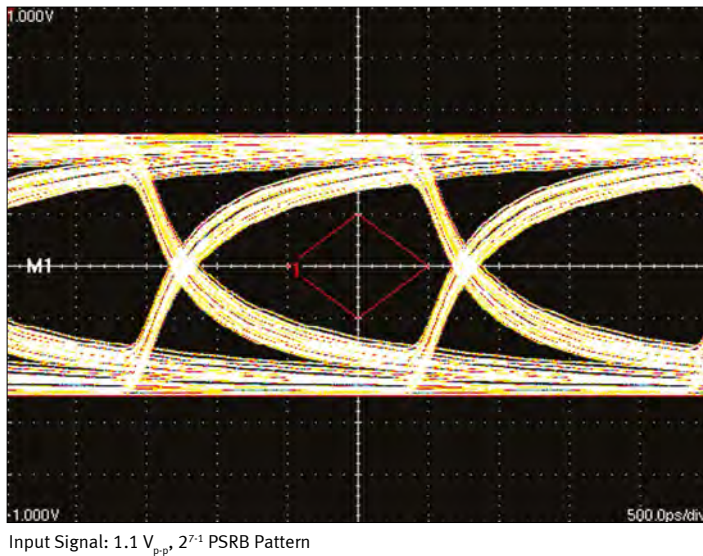
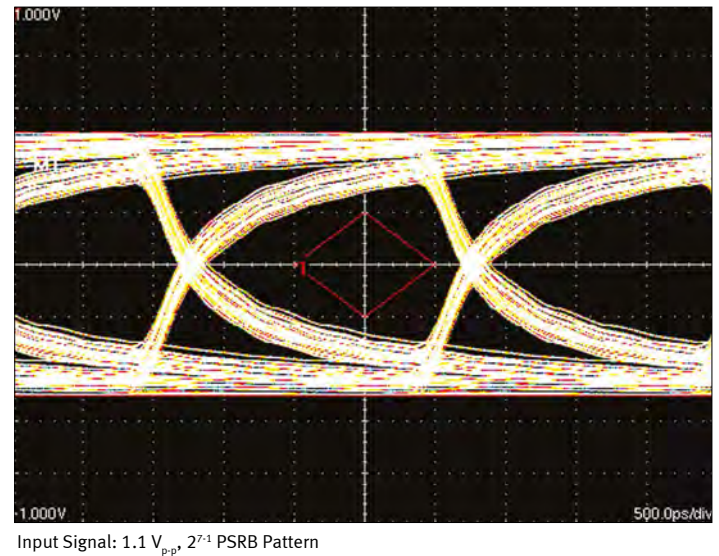


FIGURE 13: EYE PATTERN OF 24 AWG WITH FLEXURE





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ORDERING INFORMATION

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TABLE 6: PRODUCT SPECIFICATIONS

Part Number	AWG Size	Nominal Outer Diameter mm (in)	Minimum Bend Radius mm (in)	Nominal Weight kg/km (lbs/1000 ft)	Typical Attenuation dB/30 m (dB/100 ft)			
					100 MHz	200 MHz	500 MHz	1 GHz
RCN8645	22	4.95 (0.195)	24.8 (0.98)	61.0 (41.0)	5.5	8.8	12.8	18.2
RCN8647	24	4.47 (0.176)	22.4 (0.88)	46.1 (31.0)	6.8	10.9	15.5	22.5
RCN8652	26	3.51 (0.138)	17.6 (0.69)	33.0 (22.2)	9.0	14.2	20.2	29.5
RCN9056	28	2.79 (0.110)	14.0 (0.55)	20.8 (14.0)	14.8	22.0	28.9	41.3
RCN9057	30	2.49 (0.098)	12.4 (0.49)	16.4 (11.0)	16.8	24.0	30.8	43.3

NOTICE — USE RESTRICTIONS APPLY
Not for use in food, drug, cosmetic or medical device manufacturing, processing, or packaging operations.

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