

Telcordia (Bellcore) vs. RUS Specification Comparison for OSP Copper Exchange Cable

Construction

Conductor

Both use solid annealed copper in 19, 22, 24 and 26 gauges.

Conductor Insulation

Both permit polypropylene or high density polyethylene in solid or foam-skin forms. Telcordia specification also permits medium density polyethylene, but this is rarely used.

Units/Cores

Both use 25 pair units, as well as 50 and 100 pair multi-units. Telcordia specification cables use mirror image construction on cables 1200 pair and larger. Smaller sizes and all RUS cables use a fully color-coded core construction.

Filling Compound

The entire core assembly of both products is filled with an extended thermoplastic rubber (ETPR) compound with an 80°C flow rating.

Spare Pairs

Telcordia specification cables use spare pairs in cables over 900 pairs. One spare pair is included for every 300 pairs plus one extra spare pair. These spare pairs are utilized when there are defective pairs in the cable. RUS does not permit the use of spare pairs. However, RUS does permit a limited number of pairs to deviate from selected electrical requirements.

Sheath

Both permit the use of low density, linear low density or medium density polyethylene jacket material. Telcordia specifications require uncoated metals as shielding materials, except when bonding is required. RUS specifies coating both sides of aluminum and steel for corrosion protection. Flooded and bonded designs are allowed by both Telcordia and RUS depending on the application.

Electrical Characteristics

Exchange Cable Electrical Requirements per RUS Specifications												
	ANSI/ICEA S-85-625-2002 Solid insulated, Aircore				RUS 7 CFR 1755.390 (PE-39) Solid insulated, filled core				RUS 7 CFR 1755.890 (PE-89) Foam-skin insulated, filled core			
	19	22	24	26	19	22	24	26	19	22	24	26
Mutual Capacitance, Average @ 73±5F, 1 kHz, (nF/mile) ≤12 pair >12 pair	83±7 83±4				83±7 83±4				83±7 83±4			
Mutual Capacitance, Maximum @ 73±5F, 1 kHz, (nF/mile) ≤12 pair >12 pair	94 92				94 92				94 92			
Capacitance Difference, Maximum @ 23±2°C, ≥75 pair, (%)	--				2				2			
Capacitance Unbalance, Maximum Pair-to-Pair @ 73±5F, (pF/kft) Individual RMS (>12 pair only)	80 25				80 25				80 25			
Capacitance Unbalance, Maximum Pair-to-Ground @ 73±5F (pF/kft) Individual Pair Cable Average (>12 pair only)	800 175				800 175				800 175			
DC Conductor Resistance, Maximum @ 68°F, (ohms/sheath-mile)	45.0	91.0	144.0	232.0	45.0	91.0	144.0	232.0	45.0	91.0	144.0	232.0
DC Resistance Unbalance, Maximum Individual Pair % Average %	5.0 1.5				5.0 1.5				5.0 1.5			
Dielectric Strength, Minimum (kV) Conductor to Conductor Core to Shield, Single Jacket Core to Shield, Double Jacket	5.0 10 20	4.0 10 20	3.0 10 20	2.4 10 20	7.0 15 20	5.0 15 20	4.0 15 20	2.8 15 20	4.5 10 20	3.6 10 20	3.0 10 20	2.4 10 20
Insulation Resistance, Minimum (gigohm•mile)	>1.0				>1.0				>1.0			
Attenuation, Maximum Average @ 68°F, 0.772 MHz (dB/kft) >12 pair ≤12 pair	3.3 3.6	4.7 5.2	5.9 6.5	7.4 8.1	2.8 3.1	4.0 4.4	5.0 5.5	6.5 7.2	3.2 3.5	4.5 5.0	5.6 6.2	7.1 7.8
Equal Level Far End Crosstalk, Min. [ELFEXT] @0.772 MHz*, (dB/kft) Mean Power Sum Worst Pair Power Sum	51 45	49 43	49 43	47 43	51 45	49 43	49 43	47 43	51 45	49 43	49 43	47 43
Near End Crosstalk, Minimum [NEXT] @0.772 MHz*, (dB/kft) Mean Power Sum Worst Pair Power Sum	47 42				47 42				47 42			

*RUS specifications also require crosstalk testing at 1.600, 3.150 and 6.300 MHz.

Exchange Cable Electrical Requirements per Telcordia GR-421-CORE																
	Solid insulated Aircore				Foam-skin insulated Aircore				Solid insulated Filled core				Foam-skin insulated Filled core			
	19	22	24	26	19	22	24	26	19	22	24	26	19	22	24	26
Mutual Capacitance, Average @ 73±4F, 1 kHz, (nF/mile) ≤12 pair >12 pair	83 ±7 83 +4/-5				83 ±7 83 +4/-5				83 ±7 83 ±4				83 ±7 83 ±4			
Mutual Capacitance, Maximum @ 73±4F, 1 kHz, (nF/mile) ≤12 pair >12 pair	94 92				94 92				94 92				94 92			
Capacitance Difference, Maximum @ 23±2°C, ≥75 pair, (%)	No Requirement															
Capacitance Unbalance, Maximum Pair-to-Pair @ 73±4F, (pF/kft) Individual RMS (>12 pair only)	80 25				80 25				80 25				80 25			
Capacitance Unbalance, Maximum Pair-to-Ground @ 73±4F (pF/kft) Individual Pair Cable Average (>12 pair only) Lot Average (>12 pair only)	800 175 105				800 175 105				800 175 120				800 175 120			
DC Conductor Resistance, Maximum @ 68°F, (ohms/sheath-mile) Individual Conductor Lot Average	45.0 44.0	91.0 88.5	144.0 140.0	232.0 225.0	45.0 44.0	91.0 88.5	144.0 140.0	232.0 225.0	45.0 44.0	91.0 88.5	144.0 140.0	232.0 225.0	45.0 44.0	91.0 88.5	144.0 140.0	232.0 225.0
DC Resistance Unbalance, Maximum Individual Pair % Cable Average % Lot Average %	5.0 1.5 1.1				5.0 1.5 1.1				5.0 1.5 1.1				5.0 1.5 1.1			
Dielectric Strength, Minimum (kV) Conductor to Conductor Core to Shield, Single Jacket Core to Shield, Double Jacket	5.0 10 20	4.0 10 20	3.0 10 20	2.4 10 20	- 5 20	1.4 5 20	1.2 5 20	1.0 5 20	7.0 15 20	5.0 15 20	4.0 15 20	2.8 15 20	4.5 10 20	3.6 10 20	3.0 10 20	2.4 10 20
Insulation Resistance, Minimum (gigohm•mile)	>1.0				>1.0				>1.0				>1.0			
Attenuation, Maximum Average @ 68°F, 0.772 MHz (dB/kft) >12 pair ≤12 pair	3.3 3.6	4.7 5.2	5.9 6.5	7.4 8.1	- -	5.0 5.5	6.3 6.9	7.9 8.7	2.8 3.1	4.0 4.4	5.0 5.5	6.4 7.0	3.2 3.5	4.5 5.0	5.6 6.2	7.0 7.7
Equal Level Far End Crosstalk, Min. [ELFEXT] @0.772 MHz**, (dB/kft) Mean Power Sum Worst Pair Power Sum	51 45	49 43	49 43	47 43	51 45	49 43	49 43	47 43	49 43	47 43	49 43	47 43	51 45	49 43	49 43	47 43
Near End Crosstalk, Minimum [NEXT] @0.772 MHz**, (dB/kft) Mean Power Sum Worst Pair Power Sum	47 42				47 42				47 42				47 42			

**GR-421-CORE also requires crosstalk testing at 0.150, 1.600, 3.150 and 6.300 MHz.