

Telcordia (Bellcore) vs. RUS Specifications

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.

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 ± 5°F, 1 kHz, (nF/mile)	≤ 12-pair	83 ± 7				83 ± 7				83 ± 7			
	> 12-pair	83 ± 4				83 ± 4				83 ± 4			
Mutual Capacitance, Max. @ 73 ± 5°F, 1 kHz, (nF/mile)	≤ 12-pair	94				94				94			
	> 12-pair	92				92				92			
Capacitance Difference, Max. @ 23 ± 2°C, (%)	≥ 75-pair	--				2				2			
Capacitance Unbalance, Max. Pair-to-Pair @ 73 ± 5°F, (pF/kft)	Individual Pair	80				80				80			
	RMS (> 12-pair only)	25				25				25			
Capacitance Unbalance, Max. Pair-to-Ground @ 73 ± 5°F (pF/ kft)	Individual Pair	800				800				800			
	Cable Average (> 12-pair only)	175				175				175			
DC Conductor Resistance, Max. @ 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	5.0				5.0				5.0			
	Average	1.5				1.5				1.5			
Dielectric Strength, Minimum (kV)	Conductor to Conductor	5.0	4.0	3.0	2.4	7.0	5.0	4.0	2.8	4.5	3.6	3.0	2.4
	Core to Shield, Single Jacket	10				15				10			
	Core to Shield, Double Jacket	20				20				20			
Insulation Resistance, Min. (gigohm•mile)		> 1.0				> 1.0				> 1.0			
Attenuation, Max. Average @ 68°F, 0.772 MHz (dB/kft)	>12-pair	3.3	4.7	5.9	7.4	2.8	4.0	5.0	6.5	3.2	4.5	5.6	7.1
	≤12-pair	3.6	5.2	6.5	8.1	3.1	4.4	5.5	7.2	3.5	5.0	6.2	7.8
ELFEXT Minimum @ 0.772 MHz*, (dB/kft)	Mean Power Sum	51	49	49	47	51	49	49	47	51	49	49	47
	Worst Pair Power Sum	45	43	43	43	45	43	43	43	45	43	43	43
NEXT Minimum @ 0.772 MHz*, (dB/kft)	Mean Power Sum	47				47				47			
	Worst Pair Power Sum	42				42				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, Avg. @ 73 ± 4°F, 1 kHz, (nF/mile)	≤ 12-pair	83 ± 7				83 ± 7				83 ± 7				83 ± 7			
	> 12-pair	83 +4/-5				83 +4/-5				83 ± 4				83 ± 4			
Mutual Capacitance, Max. @ 73 ± 4°F, 1 kHz, (nF/mile)	≤ 12-pair	94				94				94				94			
	> 12-pair	92				92				92				92			
Capacitance Difference, Max. @ 23 ± 2°C, ≥75 pair, (%)		No requirement															
Capacitance Unbalance, Max. Pair-to-Pair @ 73 ± 4°F, (pF/kft)	Individual Pair	80				80				80				80			
	RMS (> 12-pair only)	25				25				25				25			
Capacitance Unbalance, Max. Pair-to-Ground @ 73 ± 4°F (pF/kft)	Individual Pair	800				800				800				800			
	Cable Average (> 12-pair only)	175				175				175				175			
	Lot Average (> 12-pair only)	105				105				105				105			
DC Conductor Resistance, Max. @ 68°F, (ohms/sheath mile)	Individual Conductor	45	91	144	232	45	91	144	232	45	91	144	232	45	91	144	232
	Lot Average	44	89	140	225	44	89	140	225	44	89	140	225	44	89	140	225
DC Resistance Unbalance, Max. (%)	Individual Pair	5.0				5.0				5.0				5.0			
	Cable Average	1.5				1.5				1.5				1.5			
	Lot Average	1.1				1.1				1.1				1.1			
Dielectric Strength, Min. (kV)	Conductor to Conductor	5	4	3	2.4	-	1.4	1.2	1	7	5	4	2.8	4.5	3.6	3	2.4
	Core to Shield, Single Jacket	10				5				15				10			
	Core to Shield, Double Jacket	20				20				20				20			
Insulation Resistance, Min. (gigohm•mile)		> 1.0				> 1.0				> 1.0				> 1.0			
Attenuation, Maximum Avg. @ 68°F, 0.772 MHz (dB/kft)	> 12-pair	3.3	4.7	5.9	7.4	-	5	6.3	7.9	2.8	4	5	6.4	3.2	4.5	5.6	7.0
	≤ 12-pair	3.6	5.2	6.5	8.1	-	5.5	6.9	8.7	3.1	4.4	5.5	7	3.5	5	6.2	7.7
ELFEXT, Minimum @ 0.772 MHz**, (dB/kft)	Mean Power Sum	51	49	49	47	51	49	49	47	51	49	49	47	51	49	49	47
	Worst Pair Power Sum	45	43	43	43	45	43	43	43	45	43	43	43	45	43	43	43
NEXT, Minimum @ 0.772 MHz**, (dB/kft)	Mean Power Sum	47				47				47				47			
	Worst Pair Power Sum	42				42				42				42			

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