GST 2001-111

for

OUTDOOR DIRECT BURIAL 4 PAIR UTP CABLES
(Enhanced Category 5)

(Ref.: UL 444, ANSI/EIA/TIA-568B.2 & ISO/IEC 11801)

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1. SCOPE

This specification is based on the specifications of UL 444, ANSI/TIA/EIA-568B.2 and ISO/IEC 11801 and covers the requirements for unshielded twisted pair (UTP) out door cables Direct Burial type of 100? , Enhanced Category 5 (Cat.5E).

- Applicable cable size ; 4 pairs

2. CABLE CONSTRUCTION

2.1 CONDUCTOR

The conductors shall be solid, annealed and bare copper with a diameter of AWG24 and minimum acceptable diameter shall be 0.485mm.

2.2 INSULATION

Each conductor shall be insulated with solid high density polyethylene.
The insulation shall be uniform and shall not have any defects.
The diameter over the insulation shall be maximum 1.22mm.

2.3 COLOR CODE

The color code of insulation shall be shown as Table 1.

Table 1. Color code of insulation

Pair No.	a-wire		b-wire	
	Base	Stripe	Base	Stripe
1	White	Blue	Blue	-
2	White	Orange	Orange	-
3	White	Green	Green	-
4	White	Brown	Brown	-

* The stripe marking shall be applied on the white color.

2.4 CORE ASSEMBLY

Two insulated conductors shall be twisted into a pair.
Four twisted pairs shall be stranded into a core.
If required for manufacturing reasons, a plastic tape may be applied over the cable core.

2.5 SHEATH

The low density polyethylene compound colored black shall be applied over the cable core. The sheath shall be uniform and shall not have any defects. The thickness of sheath and cable diameter shall be shown as below Table 2.

Table 2. Sheath thickness and cable diameter

Sheath thickness (mm)		Cable diameter
Nom.	Min. Avg.	(Nom. mm)
0.7	0.60	6.0

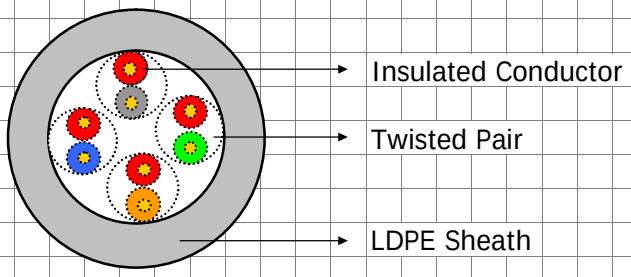

Fig. 1. Crosssectional Diagram of cable

3. ELECTRICAL CHARACTERISTICS

3.1 ELECTRICAL CHARACTERISTICS

Characteristics		Unit	Cat.5E			
DC Resistance		O/100m	Max. 9.38			
DC Resistance Unbalance		%	Max. 5.0			
Mutual Capacitance		nF/100m	Max. 5.6			
Capacitance Unbalance		pF/100m	Max. 330			
(Pair to Ground)						
Insulation resistance		? -300m	Min. 100			
Dielectric Strength		DC KV/sec.	2.5 / 2			
Impedance		O				
- Zo	1 ~100MHz		100 ± 15			
- Zinput	1 ~100MHz		100 ± 15			
Return Loss (RL)		dB/100m	RL	Att.	NEXT	PSNEXT
			(Min.)	(Max.)	(Min.)	(Min.)
Attenuation (Att.)	0.772MHz		-	1.8	##	64.0
	1MHz		20.0	2.0	##	62.3
Pair-to-Pair	4MHz		23.0	4.1	##	53.3
Near End	8MHz		24.5	5.8	##	48.8
Cross Talk (NEXT)	10MHz		25.0	6.5	##	47.3
	16MHz		25.0	8.2	##	44.2
Power Sum	20MHz		25.0	9.3	##	42.8
Near End	25MHz		24.3	10.4	##	41.3
Cross Talk	31.25MHz		23.6	11.7	##	39.9
(PSNEXT)	62.5MHz		21.5	17.0	##	35.4
	100MHz		20.1	22.0	##	32.3
Pair-to-Pair		dB/100m	ELFEXT	PSELFEXT	ACR	PSACR
Equal Level Far End			(Min.)	(Min.)	(Min.)	(Min.)
Cross Talk (ELFEXT)	0.772MHz		-	-	##	62.2
	1MHz		63.8	60.8	##	60.3
Power Sum	4MHz		51.8	48.8	##	49.2
Equal Level Far End	8MHz		45.7	42.7	##	43.0
Cross Talk	10MHz		43.8	40.8	##	40.8
(PSELFEXT)	16MHz		39.7	36.7	##	36.0
	20MHz		37.8	34.8	##	33.5
Pair-to-Pair ACR	25MHz		35.8	32.8	##	30.9
(ACR)	31.25MHz		33.9	30.9	##	28.2
	62.5MHz		27.9	24.9	##	18.4
Power Sum ACR	100MHz		23.8	20.8	##	10.3
(PSACR)						
Propagation	1MHz	ns/100m	Max. 570			
Delay	10MHz		Max. 545			
	100MHz		Max. 538			
Propagation	1MHz	ns/100m	Max. 45			
Delay Skew	10MHz		Max. 45			
	100MHz		Max. 45			

4. PHYSICAL PERFORMANCE

4.1 INSULATION

The unaged tensile strength and elongation, measured in accordance with clause 6.3 of UL 444 shall be minimum 16.5MPa and 300%, repectively.

The heat-aged tensile strength and elongation, measured in accordance with clause 6.3 of UL 444 shall be minimum 75% and 75% of un-aged, repectively.

The insulation shrinkage, measured in accordance with clause 6.4 of UL 444, shall not exceed 9.5mm.

The insulation cold bend, measured in accordance with clause 6.5 of UL 444, shall show no visible cracks.

4.2 SHEATH

The unaged tensile strength and elongation, measured in accordance with clause 4.9 of UL 444 shall be minimum 9.7MPa and 350%, repectively.

The heat-aged tensile strength and elongation, measured in accordance with clause 6.8 of UL 444 shall be minimum 75% and 75% of un-aged, repectively.

5. MARKING OF CABLES

The cable shall be marked on the sheath to designate the transmission performance and/or others (If ordered by purchaser).
The marking shall be repeated through the outer sheath clearly.

6. PACKING

Each length of completed cable shall be wound on wooden drum or pull-out box.
The standard delivery length shall be1,000 feet.

7. MARKING ON TAG AND/OR REEL

The following details shall be marked on a tag affixed to each shipping length of cable in a reel, or directly marked on the outer surface of the reel.

1) AWG size and number of pairs
2) Length
3) Others

- End of Specification -