



TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

This Certificate consists of 3 pages.

This is to certify that the

TİP 2: NAVY SHIP CONTROL AND SIGNAL CABLES

With type designations

ULPNGSG, ULPNGSG-FR

Manufactured by

ÜNTEL KABLOLARI SANAYİ VE TİCARET A.Ş.

Is found to comply with

**TÜRK LOYDU RULES CHAPTER E PART 105 JAN 2016, CHAPTER B PART 5 JULY 2019,
TÜRK LOYDU ASKERİ GEMİ KABLOLARI İÇİN TEST GEREKSİNİMLERİ**

Application	: Tip 2, Lightweight, power, control, signal cables for naval ships
Design	: Voltage class up to 550 VAC & 825 VDC and Temperature Class 90°C
Sizes	: Core Number: 2 to 37, Cross Section: 1,5 mm ² , 2,5 mm ²
Address of Manufacturer	: Demirciler Köyü, Makina OSB, 6. Cadde, No:4 , 41455, Dilovası Kocaeli/TURKİYE
Place and date	: İSTANBUL / 23.06.2021

Subject to the conditions referred to in the following pages, this certificate is valid until 22.06.2026

Emrah SÖĞÜTÇÜ
New Building Division Manager



Product description : Lightweight Power, Signal and Control cables for fixed applications for naval and commercial ships with following properties:

Voltage ratings: 550 VAC or 825 VDC

Temperature Class: 90°C

Cables mentioned in this certificate are Tip 2 type cables in TL Askeri Gemi Kabloları için Test Gereksinimleri Technical Guideline.

Type Designation : Below type designations can be used

ULPNGSG: Halogen free screened signal and communication cables

ULPNGSG-FR: Halogen free screened signal and communication cables with fire resistant capability

-FR is used for fire resistivity

Materials used :

Conductor: Copper for electrical application

Material for Fire Resistivity: Fire resistive tape (mica tape etc.) around conductor FR type

Material for Separator: Polyester foil or equivalent halogen free, low smoke, fire retardant type

Material for Insulation: Halogen free, cross linked polymeric material

Material for Covering of Cores: Halogen free elastic or plastic compound

Material for Screen: Cooper for electrical applications and additional cover for EMC types

Material for Sheath: Halogen free, cross linked elastomeric compound

Application/Limitation (Approval conditions):

- Following standards are used also; IEC 60092-350, 352, 360, IEC 60332-1-2, IEC 60332-3-22, IEC 60331-21 (FE 180) (Fire Resistant Types Only), EN 50147-1, MIL-STD 285 (for EMC)
- Bending radius of the cables are to be according to the manufacturer specifications.
- Core color codes and numbers are to be according to the related standards and/or manufacturer specification may change the color codes with permission of TL. Different core coding must be stated in the TL test certificate.

Documentation : Type tests reports (TL, ÜNTEL, TSE, VDE, and BOUN),

In service life test (20,000 h) and determination of temperature index test report

Test carried out (and results) : Below tests and QMS audit have been carried out and found satisfactory.

- 1- Visual inspection and dimensional controls
- 2- Construction and finishing control
- 3- Marking control
- 4- Print durability control
- 5- Mechanical controls;
 - Tensile strength and elongation tests (Insulation and sheath)
 - Abrasion test
 - Notch sensitivity test
 - Tear resistance test
- 6- Thermal effect tests;
 - Cold bend test ($d > 12,5$ mm), Coiling test at low temperature ($d \leq 2,5$ mm)
 - Hot set test
 - Shrinkage test
 - Heat shock test
- 7- Fire retardant tests (single cable and cable bunch)
- 8- Tensile strength and elongation change tests after aging treatment (Insulation, sheath and complete cable)
- 9- Ozone resistance test
- 10- Smoke density control

11- Electrical controls;

- Conductor resistance test
- High voltage test
- Insulation resistance test (20°C and 90°C)
- Electromagnetic compatibility test
- Increase in AC capacitance test

12- Halogen content control, corrosivity of combustion gases and Fluorine content test

13- In service life control

14- Toxicity index control

15- Operation under fire condition (3h) test (Fire resistant types only)

16- Chemical resistance and oil resistance tests for sheath

Place of test carried out : ÜNTEL FACTORY, TSE, VDE, BOUN

Marking of product: ÜNTEL, TL Type No, ÜNTEL Cable name, TL Guideline Name, Standards, Cable code, Number of cores, Cross section, Year of production, Lot number.



Yağız YILDIRIM
Surveyor

This certificate is subject to terms and conditions described below:

- Any significant change in design or construction may render this Certificate invalid. Type Approval Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to the equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and relevant international instruments that apply to it.