İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

(ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

Adres/Adress: İnönü Cad. No:38 Sefaköy-Küçükçekmece / İSTANBUL Tel:(0212) 444 1 428

MUAYENE VE DENEY RAPORU

TEST REPORT

IAU
17-107
31.03.2017

Deneyi Talep Eden : ÖZ DANIŞMANLIK HİZMETLERİ SAN. TİC. LTD. ŞTİ.
(Adı,Adresi,Şehir v.b.) Büyükdere Cad. Esentepe Mah. Yonca Apt. Bblok No:151 K:5 Mecidiyeköy/İSTANBUL
Customer (Name,Adress,City etc.)

Deney Talep Tarihi /No : 20.03.2017
Order Date /No

Numunenin Kabul Tarihi : 20.03.2017
Test Item Receipt Date

Deneylerin Yapıldığı Tarih : 20.03 – 31.03.2017
Date of Test

Uygulanan Standart /Metod : TS EN 60884-1
Applied Standart/Method

Raporun Sayfa Sayısı : 43
Number of Pages of the report

Açıklamalar :

Deney ve/veya ölçüm sonuçları,genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.
The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Mühür	**Tarih**	**Deney Sorumlusu**	**Kontrol Eden**	**Onaylayan**
Seal	*Date*	*Person in charge of tests*	*Reviewer*	*Approved By*
		Engin HUYSAL	*Temel SÖNMEZOCAK*	*Prof.Dr. Zafer UTLU*
		Lab. Tech.	*Quality Manager*	*Lab. Manager*

DENEY RAPORU / *TEST REPORT*

TS EN60884-1

Rapor No / *Report no* : 17-107

Yayın Tarihi / *Publishing date* : 31.03.2017

Sayfa sayısı / *Number of Pages* : 43

Deney Laboratuarı / *Laboratory* : İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

Adres / *Adress*: İnönü Cad. No:38 Sefaköy-Küçükçekmece / İSTANBUL

Talep Eden / *Customer*: ÖZ DANIŞMANLIK HİZMETLERİ SAN. TİC. LTD. ŞTİ.

Adres / *Adress*: Büyükdere Cad. Esentepe Mah. Yonca Apt. Bblok No:151 K:5 Mecidiyeköy/İSTANBUL

Test Spesifikasyonları / *Testing Features*:

Standart / *Standard*: TS EN 60884-1

Test Prosedürü / *Testing Procedure* : Standart Deney Prosedürleri

Standart Dışı Metot / *Method out of Standard* : N/A

Numunenin Tanımı / *Description of Sample* : Rack Kabini

Üretici / *Producer* : Tekniksat Elektrik Elektromekanik Sanayi ve Ticaret A.Ş.

Model - Tip Referansı/ *Model - Typereference*: TRK 16U

Anma Değerleri/*Nominal Values* : max. 4000W 16A 250V

İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

(***ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)***

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Deney numunesinin ayrıntıları / *Description of Test Sample*……: 2P+PE , IP20, 250AC , 16A
Muhtemel Deney Hükümleri/*Possible Test Verdict*: - İlgili deney, numuneye uygulanamaz/ *Not Applicable for test sample* ……: -- Not Applicable(N) - Numune ilgili deneyden geçmiştir/ *It is suitable for test sample* ……: P (Pass) - Numune ilgili deneyden geçmemiştir/ *It is not suitable for testsample* ……: F (Fail)
Deney/*Test*: Numunenin alındığı tarih/*Sample Date*……: 20.03.2017 Deney performans tarihleri /*Date of Test* ……: 20.03-31.03.2017
Deney Ortam Şartları/Experimental Ambient Conditions: 25°C ±5°C, 35%RH±5%RH

İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

(***ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)***

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Deney Cihazı / Deney Maddesi/Deney Adı/ Kalibrasyonun Yapıldığı Firma/Kalibrasyon Numarası

Test Equipment / Test Claue / Name of Test / Calibration Labratory / Calibration Number

İndikatörlü Deney Parmağı/madde8.2.5/Metkal Kalibrasyon/15-43959

Kızaran Tel Cihazı/madde 13.3.2/Kızaran Tel Deneyi / Metkal Kalibrasyon/15-42991

İğne Alev Cihazı/madde 13.3.1/İğne Alev Deneyi/Metkal Kalibrasyon/15-42336

Bilya Basınç Aparatı/madde13.2.1/Bilya Basınç Deneyi/Metkal Kalibrasyon/15-42991

Yüzeysel Kaçak Yolu Cihazı/madde13.4/Yüzeysel Kaçak Testi/Metkal Kalibrasyon/15-42068

Metrel MI2094/madde7.2/Topraklama Deneyi/Metkal Kalibrasyon/15-42069

Metrel MI2094/madde10.2.1/Yalıtım direnci Deneyi/Metkal Kalibrasyon/15-42069

Metrel MI2094/madde10.2.2/Elektriksel Dayanım Deneyi/Metkal Kalibrasyon/15-42069

Metrel MI2094/madde10.3/Kaçak Akım Deneyi/Metkal Kalibrasyon/15-42069

Picotest Datalogger/madde12.4/Isıl Deney(olağan çalışma)/Metkal Kalibrasyon/15-43162

Isı Deney Köşesi/madde12.5/Isıl Deney (olağan dışı çalışma)/Metkal Kalibrasyon/15-42337

Darbe Çekici/madde4.13.1/Darbe Deneyi/Metkal Kalibrasyon/15-43571

Nem Kabini/madde9.3/Nem Testi/Metkal Kalibrasyon/15-42151

İndikatörlü Deney Parmağı/madde8.2.5/Metkal Kalibrasyon/15-43959

Etüv Fırın / madde13.2.1/ Bilya Basınç Deneyi/Metkal Kalibrasyon/15-42330

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
8	**Marking**		P
8.1	Accessories shall be marked as follows	(see below)	P
	Rated current in amperes (A)	16 A	P
	Rated voltage in volts (V)	250 V	P
	Symbol for nature of supply	~	P
	Manufacturer's or responsible vendor's name, trade mark or indentification mark		N
	Type reference which may be a catalogue number		N
	The degree of protection against access to hazardous parts and against harmful effects duo to ingress of solid foreign objects		N
	The degree of protection against harmful effects due to ingress of water		N
	Socket-outlets with screwless terminals (see below)		N
	An appropriate marking indicating the length of insulation to be removed before the insertion of the conductor into the screwless terminal		N
	An indication of the suitability to accept rigid conductors only, for those socket-outlets having this restriction		N
8.2	Prescript symbols		P
	The marking for the nature of supply shall be placed next to the marking for rated current and rated voltage		P
8.3	For fixed socket-outlets (see below)		P
	Rated current, rated voltage and nature of supply		N
	Either the name, trade mark or indentification mark of the manufacturer or of the responsible vendor		N
	Length of insulation to be removed before the insertion of the conductor into the screwless terminal		N
	The type reference, which may be a catalogue member		N
	Parts such as cover plated, which are necessary for safety purposes and are intended to be sold separately, shall be marked with the manufacture's or responsible vendor's name		N
	The IP code, if applicable, shall be marked so as to be easily discernible when the socket-outlet is mounted and wired as for normal use		N
8.4	The marking of the plugs and portable socket-outlets shall be easily discernible		P
	Plugs and portable socket outlets for equipment of class II, shall not be marked with the symbol for class II contruction		
8.5	Neutral conductor terminals marked by ”N”		P
	Earthing terminals marked by “ ⏚ ”		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
	These markings shall not be placed on screws, or any other easily removable parts		N
	Terminals provided for the connection of conductors not forming part of the main function of the socket-outlets(see below)		N
	Clearly identified unless their purpose is self-evident		N
	Indicated in a wiring diagram		N
	The indication of such terminals(see below)		N
	Their being marked with graphical symbols		N
	Their being marked with physical dimensions or relative location		N
8.6	For surface-type mounting boxes forming an integral part of socket-outlets having an IP code higher than IP20,the IP code shall be marked on the outside of its associated enclosure so as to be easily discernible	Not higher than IP20	N
8.7	The degree of protection of flush-type and semi-flush-type fixed socket-outlets having an IPX0 is ensured		N
	It shall be indicated either by marking or in a manufacturer's catalogue or instruction sheet in which special provisions		N
8.8	Marking easily legible and durable, and marking withstands rubbing-test with water and petroleum spirit (2 x 15 s)	Marked by Injection	P

9	**Checking of dimensions**		N
9.1	Accessories and surface-type mounting boxes shall comply with the appropriate standard sheets		N
	Insertion of plugs into fixed or portable socket-outlets shall be ensured by their compliance with the relevant standard sheets		N
	The manufacturing tolerances of these gauges shall be as shown in table 2 if not otherwise specified		N
9.2	It shall not be possible, within a given system, to engage a plug with (see below)		N
	A socket-outlet having a higher voltage rating or a lower current rating		N
	A socket-outlet with a different number of live poles		N
	A socket-outlet with earthing contact ,if the plug for class 0 equipment		N
	It shall not be possible to engage a plug for equipment of class I with a socket-outlet exclusively designed to accept plugs for class I equipment		N
	The impossibility of insertion is checked by applying the appropriate gauge for 1min		N

	150N (rating current<16A)		N
	250N (rating current > 16A)		N
	Elastomeric of insertion shall be checked ,it is carried out at an ambient temperature of (35±2)°C		N
9.3	Accessories with such deviations shall, comply with all other requirements of this standard as far as they reasonably apply		N

10	**Protection against electric shock**		N
10.1	Socket-outlets shall be so designed and constructed that when they are mounted and wired as for normal use, live parts are not accessible		N
	Live parts of plugs shall not be accessible		N
	The standard test finger, test probe B of IEC61032		N
	For accessories where the use of thermoplastic or elastomeric material is likely to influence the requirements, one additional test is made but at an ambient temperature of (35±2)°C,during this additional test the accessories are subjected for 1 min to a force of 75N		N
	During this test, accessories ,with their associated mounting means, shall not deform ,no live parts shall be accessible		N
	Each specimen of plug or portable socket-outlet is then pressed between two flat surfaces with the exception of 150 N for 5 min		N
10.2	Parts which are accessible when the accessory is wired and mounted as for normal use, shall be made insulating material		N
	The covers or cover-plates of fixed socket-outlets and accessible parts of plugs and portable socket-outlets may be made of metal if the requirements given in 10.2.1 or 10.2.2 are fulfilled		N
10.2.1	Metal covers or cover-plates are protected by supplementary insulation made by insulating linings or insulating barriers		N
	The insulating linings or insulating barriers cannot be removed without being permanently damaged		N
	The insulating linings or insulating barriers cannot be replaced in an incorrect position		N
	There is no risk of accidental contact between live parts and metal covers or cover-plates		N
10.2.2	Metal covers or cover-plates are automatically connected ,through a low resistance connection		N
10.3	It shall not be possible to made contact between a pin of plug and a live socket-contact of a socket-outlet while any other pin is accessible		P
	Test by means of gauges		P
	For accessories with enclosures or bodies of thermoplastic material ,the test is made at an ambient temperature of (35±2)C		P
	For socket-outlets with enclosures or bodies of rubber or polyvinyl chloride, the gauge is applied with force of 75 N for 1 min		P

	For fixed socket-outlets provided with metal cover- plates ,a clearance .between a pin and a socket- contact, of at least 2 mm is required		P
10.4	External parts of plugs shall be of insulating material		P
10.5	Shuttered socket-outlets shall be so constructed that live parts are not accessible without a plug in engagement .the gauges shall be applied to the entry holes corresponding to the live contacts only and shall not touch live parts		N
	Socket-outlets shall be so constructed that live contacts are automatically screened when the plug is withdrawn		N
	The means for achieving this shall be such that they cannot easily be operated by anything other than a plug and shall not depend upon parts which are liable to be lost		N
	A steel gauge is then applied with a force of 1 N and in three directions		N
	For socket-outlets with enclosures or bobies of thermoplastic material .the test is made at an ambient temperature of (35±2)°C		N
10.6	Earthing contacts. of a socket-outlet shall be so designed that they cannot be deformed by the insertion of a plug .to such an extent that safety is impaired		P
	A test plug .corresponding to the type of socket-outlet. is inserted into the socket- outlet with a force of 150 N which is applied for 1 min		P
	After this test. the socket-outlet shall still comply with the requirements of clause 9		P
10.7	Socket-outlets with increased protection shall be so constructed .live parts shall not be accessible		N
	Compliance is checked by inspection and by applying with a test wire of 1.0 mm diameter a force of 1 N on all accessible surfaces in the most unfavourable conditions without a plug inserted		N
	For socket-outlets with enclosures or bobies of thermoplastic material .the test is made at an ambient temperature of (35±2)°C		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*

11	**Provision of earthing**		P
11.1	Accessible with earthing contacts shall be so constructed that when inserting the plug the earth connection id made before the current-carrying contacts of the plug become live		P
	When withdrawing the plug. the current-carrying pins shall separate before earth connection is broken		P
11.2	Earthing terminals of rewirable accessories shall comply with the appropriate requirements of clause 12		P
	They shall be the same size as the corresponding terminals for the supply conductors		P
	Fixed socket-outlets can have an additional external earthing terminal, the earthing terminal shall be of a size suitable for conductors of at least 6 mm2		N
	Earthing terminals of rewirable accessories with earthing contact shall be internal		N
	Earthing terminals of fixed socket-outlets shall be fixed to the base or to a part reliably fixed to the base		N
	Earthing contacts of fixed socket-outlets shall be fixed to the base or the cover		N
	This connection shall be ensured under all conditions which may occur in normal use ,including loosening of cover-fixing screws, careless mounting of the cover, etc.		P
	Except as mentioned above, parts of the earthing circuit shall be in one piece or shall be reliably connected together by riveting, welding, or the like		P
11.3	Accessible metal parts of fixed socket-outlets with earthing contact, which may become live in the event of an insulation fault, shall be permanently and connected to the earthing		N
11.4	Adequate space for a floating terminal allowing the connection of an incoming and an outgoing conductor for the continuity of the earthing circuit		N
	The earthing terminal of the socket-outlet itself is so designed that if allows the connection of an incoming and an outgoing earthing conductor		N
11.5	The connection between the earthing terminal and metal parts to be connected there to, shall be of low resistance		P
	Equal to 1,5 times the rated current or 25 (A)		P
	Resistance no exceed 0,05 Q	*0,046 Q*	P

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
12	**Terminals and terminations**		P
	All the test on terminals, with the exception of the test of 12.3.11 and 12.3.12 shall be made after the tests of the clause 16		P
12.1	Common request		P
12.1.1	Rewirable fixed socket-outlets shall be provided with screw-type terminals or with screwless terminals		P
	Rewirable plugs and rewirable portable socket-outlets shall be provided with terminals with screw clamping		N
	In screw-type terminals ,the pre-soldered area shall be outside the clamp area when connected ad for normal use		P
	The means or clamping the conductors in the terminals shall not serve to fix any other component		P
12.1.2	Non-rewirable accessories shall be provided with soldered,welded,crimped		N
	Screwed or snap-on connections shall not be used		N
	Connections made by crimping a pre-soldered flexible conductor are not permitted		N
12.1.3	Compliance is checked by inspection and by the texts of 12.2 or 12.3 as applicable		N
12.2	Terminals with screw clamping for external copper conductors		P
12.2.1	Accessories shall be provided with terminals which shall allow the proper connection of copper conductors having nominal cross-sectional areas as shown in table 3		P
	Current and type of accessory (A)	16A	P
	Type of conductor (rigid conductors/flexible conductors)	Rigid or flexible conductors (PVC)	P
	Least/largest cross-sectional area(mm_2) (16 A: 0.75-1,5)	>1,5mm^2	P
	Symbol of terminal		-
	The conductor space shall be at least that specified in figures 2,3,4 or 5 . The rated of value,the practice of value		P
12.2.2	Terminals with screw clamping shall allow the conductor to be connected without special preparation		P
12.2.3	Terminals with screw clamping shall have adequate mechanical strength		P
	Screws and nuts for clamping the conductors shall have a metric ISO thread		P

	Screws shall not be of metal which is soft or liable to creep,such as zinc or aluminium		P
12.2.4	Terminals with screws clamping shall be resistant to corrosion		P
12.2.5	Terminals with screw clamping shall be so designed and constructed that they clamp the conductor without undue damage to the conductor		P
	Compliance is checked by the following test		P
	Type of conductor	copper	P
	Cross-sectional area(mm_2) ,diameter of bushing hole(mm), height(mm), pull (kg)	Test was performed according to Table - 9	P
	Nominal diamter of thread (mm),torque (Nm)	Test was performed according to Table - 9	P
	During the test,the conductor shall neither slip out of the clamping unit nor break near the clamping unit ,nor shall the conductor the damaged in such a way as to tender it unfit for further use		P
12.2.6	Terminals with screw clamping shall be so designed that they clamp the conductor reliably between metal surfaces		P
	Least cross-sectional area(mm_2),pull(N) ,1min	40 N	P
	Largest cross-sectional area(mm_2),pull(N) ,1min	40 N	P
	During the test,the conductor shall not move noticeally in the terminal	Not move	P
12.2.7	Terminals with screw clamping shall be so designed or placed that neither a rigid solid conductor nor a wire of a standed conductor		P
	Largest cross-sectional area (mm2)	4 mm2	-
	Number of wires (n) and nominal diameter of conductors		P
	Rigid solid conductor (mm)		-
	Rigid stranded conductor (mm)		-
	Terminals intended for the looping-in of two or three conductors are checked,being fitted with the permissible number of conductors		-
	Torque (Nm)	0,8	P
	After the test,no wire of the conductors shall have eacaped from the clamping		P
12.2.8	Terminals with screw clamping shall be so fixed or located within the accessory that,when the clamping screws or nuts are tightened		P
	Largest cross-sectional area (mm2)	4 mm2	
	Torque (Nm)	1,2	
	During the test,terminals shall not work loose and there shall be no damage	No damage	P
12.2.9	Clamping screws or nuts of earthing terminals with screw clamping shall be adequately locked against accidental loosening and it shall		P
12.2.10	Earthing terminals with screw clamping shall be such that there is no risk of corrosion resulting from contact between these parts and the copper of the earthing conductor		P
	The body of the earthing terminal shall be of brass		P
	The body of the earthing terminal shall be of other metal no resistant to corrosion .unless it is a part of the metal frame or enclosure,when the screw or nut shall be of brass or other metal no less resistant to corrosion		P
12.2.11	Pillar terminals:the distance between the clamping screw and the end of the conducor, the rated of value(mm),the practice of value(mm)		P
	Mantle terminals:the distance between the fixed part and the end of the conductor, the rated of value(mm),the practice of value(mm)		P
12.3	Screwless terminals for external copper conductors		N
12.3.1	The type suitable of screwless terminals		N

	Rigid copper conductors		N
	The type suitable for both rigid and flexible copper conductors		N
12.3.2	Screwless terminals shall be provided with two clamping units each allowing the proper connection of rigid or of rigid and flexible copper conductors having nominal cross-sectional area as shown in table 7		N
	When two conductors have to be connected,each conductors shall be introduced in a separate indupendent clamping unit		N
12.3.3	Screwless terminals shall allow the conductor to be connected without special perparation		N
12.3.4	Parts of screwless terminals mainly intended to carry current shall be of materials as specified in 26.5		N
12.3.5	Screwless terminals shall be so designed that they clamp the specified conductors with sufficient contact perssure and without undue damage to the conductor		N
	The conductor shall be clamped between metal surface		N
12.3.6	It shall be clear how the connection and disconnection of the conductors is to be made		N
	The intended disconnection of a conductor shall require an operation,other than a pull on the conductor,so that it can be made manually with or without the help of a general perpose tool		N
	It shall not be possible to confuse the opening intended for the use of a tool to assist the connection or disconnection with the opening intended for the conductor		N
12.3.7	Screwless terminals which are intended to be used for the interconnection of two or more conductors		N
	During the insertion,the operation of the clamping means of one of the conductors is independent of the operation of that of the other conductor		N
	During the insertion,the conductors can be disconnected either at the same or separately		N
	Each conductor shall be introduced in a separate clamping unit		N
	It shall be possible to clamp securely any number of conductors up to the maximum as designed		N
12.3.8	Screwless terminals of fixed socket-outlets shall be disigned so that adequate insertion of the conductor is obvious and over-insertion is prevented		N
12.3.9	Screwless terminals shall be properly fixed to the socket-outlet		N
	They shall not work loose when the conductors are connected or disconnected during installation		N
	Self-hardening resins may,be used to fix terminals which are not subject to mechanical stress in normal use		N

12.3.10	Screwless terminals shall withstand the mechanical stressess occuring in normal use						N
	Test:						N
	Connected and disconnected five times: the largest nominal cross-sectional area of copper conductors (mm^2)						N
	Connected and disconnected five times: the smalleat nominal cross-sectional area of copper conductors (mm^2)						N
	Connected and disconnected one times: the largest nominal cross-sectional area of rigid copper conductors (mm^2)						N
	Connected and disconnected one times: the smllest nominal cross-sectional area of rigid copper conductors (mm^2)						N
	After each connection,the conductor is subjected to a pull of the value shown in tabel 8 (30N) ,1min						N
	Screwless terminals intended for both rigid and flexible conductors shall also be tested with flexible conductors						N
	Connected and disconnected five times: the largest nominal cross-sectional area of flexible conductors (mm^2)						N
	Connected and disconnected five times: the smallest nominal cross-sectional area of flexible conductors (mm^2)						N
	After each connection,the conductor is subjected to a pull of the value shown in tabel 8 (30N) ,1min						N
	For fixed socket-outlets with screwless,each conductor is subjected is for 15 min to a circular motion with (10±2)r/min using an apparatus						N
	Least cross-sectional area(mm^2) .diameter of bushing hole(mm), height(mm), pull (kg)						-
	largest cross-sectional area(mm^2) ,diameter of bushing hole(mm), height(mm), pull (kg)						-
	Duing the test,the conductors shall not move noticeably in the clamping unit						N
	After these test,neither the terminals nor the clamping means shall have worked loose and the conductors shall show no deterioration impairing their further use						N
12.3.11	Screwless terminals shall withstand the electrical and thermal stresses occurring in normal use						N
	a) loaing the screwless terminals for 1 h						N
	Test current (A)						-
	Cross-sectional area (mm^2)						-
	Number of screwless terminals	1	2	3	4	5	-
	The voltage drop(mV) (<15mV)						N
	b),after test a) are tested ,the screwless is subjected to temperature cycles						-
	Test current (A)						-
	Cross-sectional area (mm^2)						-

	Number of screwless terminals	1	2	3	4	5	N
	The voltage drop after 24 temperature cycles (mV)						N
	The voltage drop after 48 temperature cycles (mV)						N
	The voltage drop after 72 temperature cycles (mV)						N
	The voltage drop after 96 temperature cycles (mV)						N
	The voltage drop after 120 temperature cycles (mV)						N
	The voltage drop after 144 temperature cycles (mV)						N
	The voltage drop after 168 temperature cycles (mV)						N
	The voltage drop after 192 temperature cycles (mV)						N
	In no case shall the votage drop exceed 22,5 mV or twice the value measured after the 24th cycle ,whichever is the smaller						N
	After this test an inspection by normal or corrected vision without additional magnification shall show no change evidently impairing further use such as cracks,deformations or the like						N
	The mechanical strength test according to 12.3.10 is repeated and all specimens shall withstand this test						N
	Connected and disconnected five times: the largest nominal cross-sectional area of copper conductors (mm_2)						N
	Connected and disconnected five times: the smalleat nominal cross-sectional area of copper conductors (mm_2)						N
	Connected and disconnected one times: the largest nominal cross-sectional area of rigid copper conductors (mm_2)						N
	Connected and disconnected one times: the smllest nominal cross-sectional area of rigid copper conductors (mm_2)						N
	After each connection,the conductor is subjected to a pull of the value shown in tabel 8 (30N) ,1min						N
	Screwless terminals intended for both rigid and flexible conductors shall also be tested with flexible conductors						N
	Connected and disconnected five times: the largest nominal cross-sectional area of flexible conductors (mm_2)						N
	Connected and disconnected five times: the smallest nominal cross-sectional area of flexible conductors (mm_2)						N
	After each connection,the conductor is subjected to a pull of the value shown in tabel 8 (30N) ,1min						N
	Least cross-sectional area(mm_2) ,diameter of bushing hole(mm), height(mm), pull (kg)						-

	largest cross-sectional area(mm_2) .diameter of bushing hole(mm). height(mm). pull (kg)				-
	Duing the test.the conductors shall not move noticeably in the clamping unit				N
	After these test.neither the terminals nor the clamping means shall have worked loose and the conductors shall show no deterioration impairing their further use				N
12.3.12	Screwless terminals shall be so designed that the connected rigid solid conductor remains clamped.even when it has been deflected duing normal instalation				N
	Deflection test forces				N
	Test current (A)				-
	Cross-sectional area (mm_2)				-
	Pull (N)				-
	Number of screwless terminals	1	2	3	-
	the starting point (X=the original point)	X	X+10°	X+20°	N
	The voltage drop (mV) (1)				N
	The voltage drop (mV) (2)				N
	The voltage drop (mV) (3)				N
	The voltage drop (mV) (4)				N
	The voltage drop (mV) (5)				N
	The voltage drop (mV) (6)				N
	The voltage drop (mV) (7)				N
	The voltage drop (mV) (8)				N
	The voltage drop (mV) (9)				N
	The voltage drop (mV) (10)				N
	The voltage drop (mV) (11)				N
	The voltage drop (mV) (12)				N
	<25mV				N
	The largest cross-sectional area (mm)				-
	Pull (N)				-
	Number of screwless terminals	1	2	3	-
	the starting point (X=the original point)	X	X+10°	X+20°	N
	The voltage drop (mV) (1)				N
	The voltage drop (mV) (2)				N
	The voltage drop (mV) (3)				N
	The voltage drop (mV) (4)				N
	The voltage drop (mV) (5)				N
	The voltage drop (mV) (6)				N
	The voltage drop (mV) (7)				N
	The voltage drop (mV) (8)				N
	The voltage drop (mV) (9)				N

	The voltage drop (mV) (10)				N
	The voltage drop (mV) (11)				N
	The voltage drop (mV) (12)				N
	<25mV				N

13	**Construction of fixed socket-outlets**		N
13.1	Socket-contact assemblies shall have sufficient resilience to ensure adequate contact pressure		N
13.2	Socket-contacts and pins of socket-outlets shall be resistant to corrosion and abrasion		N
13.3	Insulating linings,barriers and the like shall have adequate mechanical strength		N
13.4	Socket-outlets shall be so constructors as to permit:		N
	Easy introduction and connection of the conductors in the terminals		N
	Easy fixing of the base to a wall or in a mounting box		N
	Correct positioning of the conductors		N
	For surface type socket-outlets,adequate space between the underside of the base and surface		N
	For installation of the socket-outlets .adequate space between the sided of the base and the enclosure		N
	Socket-outlets classified as design A shall permit easy positioning and removal of the cover or cover-plate.without displacing the conductors		N
13.5	Socket-outlets shall be so designed that full engagement of associated plugs is not prevented by any projecton from their engagement face		N
	Socket-outlet and plug does not exceed 1mm when the plug is inserted into the socket-outlet as far as it will go		N
13.6	If covers are provided with bushings for entry holes for the pins.it shall not be possible to remove them from the outside or for them to become detached inadvertently from the inside when the cover is removed		N
13.7	Covers.cover-plates of them which are intended to ensure protection against electric shock shall be held in place at two or more points by effective fixings		N
	Covers.cover-plates or parts of them may be fixed by means of a single fixing		N
	Where the fixings of covers or cover-plates of socket-outlets of design A serve to fix the base. there shall be means to maintain the base in postion.even after removal of the covers or cover-plates		N
13.7.1	For covers or cover-plates whose fixings are of the screw-type		N
13.7.2	For covers or cover-plates whose fixing is not dependent on screws and whose removal is obtained by applying a force in a direction approximately perpendicular to the mounting/supporting surface		N

	When their removal may give access,with the standard test finger,to live parts,by the tests of 24.14		N
	When their removal may give access ,with standard test finger,to non-earthed metal parts separated from live parts in such a way that creepage distances and clearances have the values shown in table 23,by the tests of 24.15		N
	When their removal may give access,with standard test finger,nly to		N
	Parts of insulating material		N
	Earthed metal parts		N
	Metal parts separated from live parts in such a way that creepage distances and clearances have twice the values shown in table 23		N
	Live parts of SELV circuits not greater than 25V		N
	By the tests of 24.16		N
13.7.3	For covers or cover-plates the fixing of which is not dependent on screws and whose removal is obtained by using s tool		N
	When their removal may give access,with the standard test finger,to live parts,by the tests of 24.14		N
	When their removal may give access ,with standard test finger,to non-earthed metal parts separated from live parts in such a way that creepage distances and clearances have the values shown in table 23,by the tests of 24.15		N
	When their removal may give access,with standard test finger,only to		N
	Parts of insulating material		N
	Earthed metal parts		N
	Metal parts separated from live parts in such a way that creepage distances and clearances have twice the values shown in table 23		N
	Live parts of SELV circuits not greater than 25V		N
	By the tests of 24.16		N
13.8	A cover-plate intended for a socket-outlet with earthing contact shall not be interchangeable with a cover-plate intended for a socket-outlet without earthing contact		N
13.9	Surface-type socket-outlets shall be so constructed ,there are no free opening in their enclosures other than the entry opening for the pins of the plug or other opening for contacts		N
13.10	Screws or other means for mounting the socket-outlet on a surface in a box or enclosure shall be easily accessible from the front		N
	These means shall not serve any other fixing purpose		N
13.11	Multiple socket-outlets with a common base shall be provided with fixed links for the interconnection of the interconnection of the contacts in parallel		N
	The fixing of these links shall be independent from the connection of the supply wires		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
13.12	Multiple socket-outlets,comprising separate bases,shall be so designed that the correct position of each base is wnsured		N
	The fixing of each base shall be independent of the fixing of the combination to the mounting surface		N
13.13	The mounting plate of surface-type socket-outlets shall have adequate mechanical strength		N
13.14	Socket-outlets shall withstand the lateral strain imposed by equipment likely to be introduced into them		N
	For socket-outlets having rating up to and including 16 A and 250 V,compliance is checked by means of the device shown in figure 13,hun on it such that the force exerted 5N 1 min,the test is made four times,the socket-outlet being turned through 90°after each engagement		N
	During the test the device shall not become disengaged from the socket-outlet		N
	After the tests ,the socket-outlets shall show no damage within the meaning of this standard	No damage	N
	After the tests ,they shall comply with the requirements of clause 22		N
13.15	Socket-outlets shall not be an integral part of lampholders		N
13.16	Surface-type socket-outlets having an IP code higher than IP20 shall be according to their IP classification when fitted with conduits or with sheathed cables cables as for normal use and without a plug in engagement		N
	If a socket-outlet has a drain hole ,it shall be not less than 5 mm in diameter,or 20 mm^2 in area with a width and a length of not less than 3 mm		N
	The drain hole shall be effective in that position		N
13.17	Earthing pins shall have adequate mechanical shrength		N
13.18	Earthing contacts and neutral contacts shall be locked against rotation and removable only with the aid of a tool,after dismanting the socket-outlet		N
13.19	Metal strip of the earthing circuit shall have no burrs which might damage the insulation of the supply conductors		N
13.20	Sock-outlets to be installed in a box shall be so designed that the conductor ends can be prepared after the box is mounted in position,but before the socket-outlet is fitted in the box		N
13.21	Inlet opening shall allow the introduction of the conduit or the sheath of the cable so as to afford complete mechanical protection		N
	Suface-type socket-outlets:		N
	The conduit or sheath of the cable can enter at least 1 mm into the enclose		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
	If there are more than one, shall be capable of accrpting conduit sizes of 16,20,25 or 32 according to IEC 60423 or combination of at least two of any of these sizes		N
	In surface-tyoe socket-outlets,the inlet opening for cable entries will preferbly be capable of accepting cables having the dimensions specified in table 14 or be as specified by the manufacturer:rated current (A),limits of external dimensions of cables (mm)		N
13.22	Membranes(grommets) in inlet opening shall be reliaby fixed and shall not be displaced by the mechanical and thermal tresses occuring in normal use	No membranes	N
	First the accessories are fitted with membranes which have been subjected to the treatment specified 16.1		N
	The accessories are then placed for 2 h in a heating cabinet ad described in 16.1,the temperature being maintained at (40±2)°C,an axial pull of 30N is applied for 5 s, during this test ,the membranes shall not deform to such an eatent that live parts become accessible		N
	an axial pull of 30N is applied for 5 s, during this test ,the membranes shall not becomes detached		N
	The membranes shall show no harmful deformation,cracks or similar damage which would lead to non-compliance with this standard		N
	The test is then repeated with membranes which have not been subjected to any treatment		N
13.23	It is recommended that membranes in inlet openings be so designed and made of such material that the introduction of the cables into the accessory is permitted when the ambient temperature is low		N
	The accessories are fitted with membranes which have not been subjected to ageing treatment,those without openings being suitably pierced		N
	The accessories are then kept for 2 h in a freezer at a temperature of (-15±2) C,without undue force, cables of the largest diameter through the membranes		N
	After the test,the membranes shall show no harmful deformation,cracks or similar damage which would lead to non-compliance with this standard		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
14	Construction of plugs and portable socket-outlets		P
14.1	Non-rewirable portable accessories shall be such that:		N
	The flexible cable cannot be separated from the accessory without making it permanently useless		N
	The accessory cannot be opened by hand or by using a general purpose tool		N
14.2	Pins of portable accessories shall hace adequate mechanical strength		P
14.3	Pins of plugs shall be :		P
	Locked against rotation		P
	Not removable without dismantling the plug		P
	Adequately fixed in the body of the plug when the plug is wired and assembled as for normal use		P
	It shall not be possible to arrange the earthing or neutral pins or contacts plugs in an incorrect position		P
14.4	Earthing contacts and neutral contacts of portable socket-outlets shall be :		N
	Locked		N
	Removable only the aid of a tool ,after dismantling the socket-outlet		N
14.5	Socket-contact assemblies shall have sufficient resilience to ensure adequate contace pressure		N
14.6	Pins and socket-contacts shall be resistant to corrosion and abrasion		N
14.7	The enclosures of rewirable portable accessories shall completely enclose the terminals and the ends of flexible cable		N
	The enclosures of rewirable portable accessories:		P
	The construction shall be such that the conductors can be properly connected		P
	Pressing the cores together causes damage to the conductor		P
	A core,the conductor of which is connected to a live terminal is not necessarily pressed against accessible metal parts		P
	A core ,the conductor of which is connected to an earthing terminal is not necessarily pressed against live parts		P
14.8	Rewirable portable accessories shall be designed in such a way that terminal screws or nuts cannot become loose and fall out of position in such a way that they estabish an eletrical connection between live parts and the earthing terminal or metal parts connected to the earthing terminal		P

14.9	Rewirable portable accessories with earthing contact shall be designed with enough space for slack in the earthing conductors		P
	The current-carrying conductors will be stressed before the earthing conductor,if the flexible cable slips in its anchorage		P
14.10	Termianls of rewirable portable accessories and terminations of non-rewirable portable accessories shall be located or shield		N
	The free wire of a conductor connected to a live terminal shall not touch any accessible metal part or be able to emerge from the enclosure when the accessory has been assembled		N
	The free wire of conductor connected to an earthing terminal shall not touch a live part		N
14.11	For rewirable portable accessories:		N
	It shall be clear how the relief from strain and prevention of twisting is intended to be effected		P
	The cord anchorage ,or at least part of it ,shall be integral with or fixed to one of the component parts of the plug or portable socket-outlet		P
	Makeshift methods shall not be used		P
	The cord anchorage shall be suitalbe for the different types of flexible cable which may be connected to it		P
	Cord anchorages shall be of insulating material or be provided with an insulating lining fixed to the metal parts		P
	Metal parts of cord anchorages,including clamping screws ,shall be insulated from the earthing circuit		P
14.12	For rewirable portable accessories and non-rewirable non-moulded on portable accessories it shall not be possible to remove covers,cover-plates or parts of them intended to ensure protection against electric shlock without the use of a tool		P
14.13	If covers of portable socket-outlets are provoded with bushings for the entry holes for the pins,these bushes shall not be removable from the outside or detachable inadvertently from the inside,when the cover is removed		N
14.14	Screws intended to allow access to the interior of the accessory shall be captive		P
14.15	The engagement face of plugs shall have no projections other than the pins		P
14.16	Portable socket-outlets shall be designed in such a way that full engagement of associated plugs is not prevented by any projection from their engagement face		N
14.17	Portable accessories of IP code higher than IP 20 shall be enclosed according to their IP classification when they are fitted with cable		N
	Plug shall be adequately enclosed when fitted with a flexible cable as for normal use		N
	Portable socket-outlets shall be adequately enclosed when fitted with a flexible cable ad for normal use and without a plug in engagement		N
	Lid springs,if any,shall be made of corrosion-resistant material,such as bronze or stainless steel		N

14.18	Portable socket-outlets having means of suspension from a wall or other mounting surfaces shall be designed that the suspension means do not allow access to live parts		N
	There shall be no free openings between the space intended for the suspension means,by which the socket- outlet is fixed to the wall,or other mounting surfaces and live parts		N
14.19	Combinations of portable accessories and switches,circuit-breakers ot other devices shall comply with the relevant individual IEC standards		N
14.20	Portable accessories shall not be an integral part of lampholders		P
14.21	Plugs classified exclusively as plugs for equipment of class Imay be rewirable or non-rewirable:		N
	If they are part of a cord set,this shall be provided with a connector for equipment of class I		N
	If they are part of a cord extension set,this shall be provided with a portable socket-outlet for equipment of class I		N
14.22	Components,such as switches and fuses, incorporated in accessories shall comply with the relevant IEC standard as far as it reasonably applies		N
14.23	If a plug is an integral part pf plug-in equipment,that equipment shall not cause overheating of the pins or impose undue atrain on fixed socket-outlets		P
	Plugs having a rating above 16 A and 250 V shall not be an integral part of other equipment		P
14.23.1	The plug of the equipment is inserted into a fixed socket-outlet complying with this standard,the socket-outlet being connected to a supply voltage equal to 1,1 times the highest rated voltage of the equipment for 1h		P
	The temperature rise of the pins shall not exceed 45K		P
14.23.2	The additional torque which has to be applied to the socket-outlet in order to maintain the engagement face in the vertical plane shall not exceed 0,25 Nm		N
14.24	Plugs shall be shaped in such a way and made of such material that they can easily be withdraw by hand from the relevant socket-outlet		P
14.25	Membranes in inlet openings of portable accessories shall meet the requirements of 13.22 and 13.23		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
15	**Interlocked socket-outlets**		N
	Socket-outlets interlocked with a switch		N
	Socket-outlets interlocked with a switch shall be constructed in such a way that a plug cannot be inserted into or completely withdrawn from the socket-outlet while the socket-contacts are live		N
	The socket-contacts of the socket-outlet cannot be made live until a plug is almost completely in engagement		N
16	**Resistance to ageing,portection porvided by enclosures,and resistance to humidity**		P
16.1	Resistance ageing		P
	Accessories shall be resitant to ageing		P
	The tempetature in the cabinet is (70±2)°C for seven days (168h)		P
	After the test:		P
	Show no crak visible	No crak visible	P
	Nor shall the material have become stick or greasy		P
	With the forefinger wrapped in a dry piece of rough cloth the specimen is pressed with a force of 5N		P
	Show no damage which would lead to non-compliance with this standard	No damage	P
16.2	Protection provided by enclosures		P
	Enclosures shall porvide protection against access to hazardous parts,harful effects duo to ingress of solid foreign objects and harmful effects due to ingress of water in accorance with the IP designation of the accessory	IP 20	P
16.2.1	Portection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects	IP 20	P
	Flush-type and semi-flush type socket-outlets are mounted in an appropriate box according to the manufacturer's instructions		N
	Accessories with screwed glands or membranes are fitted and connected with cables which shall be within the connecting range specified in table 3		N
	Largest cross-sectional area (mm_2),type of conductor		-
	Least cross-sectional area(mm_2), type of conductor		-

	Tightened-nuts :ull (Nm)		-
	Loosened-nuts:pull (Nm)		-
	Test pin:		N
	—fixed socket-outlet		N
	—removal socket-outlet		N
16.2.1.1	Protection against access to hazardous parts		P
16.2.1.2	Protection against harmful effects due to ingress of solid foreign objects		P
16.2.2	Protction against harmful effects due to ingress of water		N
16.3	Resistance to humidity		P
	Accessories shall be proof against humidity which may occur in normal use		P
	The humidity treatment is carried out in a humidity cabinet containing air with a relative humidity maintained between 91% and 95%,the temperature of the air in which the speicmens are placed is maintained within ± 1K of any convenient value of between 20C and 30C		P
	—two days (48h) for accessories having an IP code of IPX0	48h	P
	—seven days (168h) for accessories having an IP code higher than IPX0		N
	After this treatment,the speciments shall show no damage within the meaning of this standard	No damage	P

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*

17	**Insulation resistance and electric strength**		P
17.1	The insulation resistance of socket-outlets:(500V,d.c ;1min) (MQ)		P
	a)between all poles connected together and the body, >5 MQ		P
	b)between each poles in turn and all others, >5 MQ		P
	c) between any metal enclosure and metal foil in contact with the inner surface of its insulating linings , >5 MQ		P
	d)between any metal part of the cord anchorage,including clamping screws,and earthing terminals of earthing contacts,if any,of portable socket-outlets, >5 MQ		P
	e)between any metal part of the cord anchorage of portable socket-outlets and a metal rod of the macimum diameter of the flexible cable inserted in its place, >5 MQ		P
17.1.2	The insulation resistance of plugs:(500V,d.c ;1min) (MQ)		P
	a)between all poles connected together and the body, >5 MQ		P
	b)between each pole in turn and all other, >5 MQ		P
	c)between any metal part of the cord anchorage,including clamping screws,and earthing termianls or earthing contact , >5 MQ		N
	d)between any metal part of the cord anchorage and a metal rod of the macimum diameter of the flexible cable inserted in its place, >5 MQ		N
17.2	For socket-outlet: test voltage (a.c, 1min)		P
	a)test voltage (V) (main contacts)	2000V	P
	b) test voltage (V) (main contact-earthing)	2000V	P
	c) test voltage (V)		N
	d) test voltage (V)		N
	e) test voltage (V)		N
	No flashover or breakdown shall occur during the teat		N
	For plugs: test voltage (a.c, 1min)		N
	a) test voltage (V)		N
	b) test voltage (V)		N
	c) test voltage (V)		N
	d) test voltage (V)		N
	e) test voltage (V)		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
18	**Operation of earthing contacts**		P
	Earthing contacts shall provide adequate contact pressure and shall not deteriorate in normal use		P
	Compliance is checked by the tests of clauses 19 and 21		P

19	**Temperature rise**		P
	Non-rewirable accessories are tested as delivered		P
	Type of conductors:number of wires (n) ;nominal diameter of conductors	According toTable 15	P
	Rewirable accessories are fitted with polyvinyl chloride insulated conductors having a nominal cross-sectional area as shown in table 15		P
	Rated current:(A)	16	-
	Nominal cross-sectional area (mm_2)	$1mm^2$	-
	Type of conductors	PVC	-
	The terminal screws or nuts are tightened with a torque equal to two-thirds of that specified in 12.2.8		P
	Socket-outlets are tested using a test plug with brass pins having the minimum specified dimensions		P
	Plugs are tested using a fixed socket-outlet complying with this standard and having as near-to-average characteristics as can be selected		N
	The plug is inserted into the socket-outlet and an alternating current as specified in table 20,is passed for 1h		P
	The temperature rise of the terminals shall not exceed 45K		P
	For accessories having three poles or more,the current during the test shall be passed through the phase contacts		N
	Separate tests shall be made passing the current through the neutral contact (K)		N
	The adjacent phase contact and through the earthing contact,if any,and nearest phase contact (K)		N
	For the purpose of the tast of 25.3,the temperature rise of external parts of insulation material not necessary to retain current-carrying parts and parts of the earthing circuit in position,even though they are in contact with them,is also determined		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*

20	**Breaking capacity**		P
	Accessories shall have adequate breaking capacity		P
	The plug is inserted and withdraw from the socket-outlet 50 times (10 strokes) at a rate of 30 strokes per minute		P
	The test voltage shall be 1,1 times the rated voltage (V)	275V	P
	The teat current shall be 1,25 times the rated current (A) (cos9=0.6±0.05)		-
	For the teat on three-pole accessories,three-core inductors are used		N
	During the test,no sustained arcing shall occur		P
	After the test:		P
	The specimens shall show no damage impairing their further use	No damage	P
	The entry holes for the pins shall not any damage which impair the safety within the meaning of this standard		P

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
21	**Normal operation**		P
	Accessories shall withstand without excessive wear or other harmful effect,the mechanical ,electrical and thermal stresses occuring in normal use		P
	Compliance is checked by testing socket-outlets:		P
	—Tests on shuttered socket-outlets		N
	—Performing the required number of strokes with current flowing on specimens prepared by the manufacurer without shutters		P
	—Performing the same number of strokes without current flowing on specimens provided with shutters		N
	—A third choice,with operations made by hand in normal use		N
	The condition of test		P
	10000 strokes:a rate of inserted and withdraw		-
	A test voltage V_n (V)	250V	-
	A test current (A); (cos9=0.8±0.05)	16A	-
	The test curent:		P
	The periods during which the test current is passed from insertion of the plug until subsequent withdrawal are as follows:for accessories having a rated current <16A	1,5 sec.	P
	The periods during which the test current is passed from insertion of the plug until subsequent withdrawal are as follows:for accessories having a rated current > 16A		N
	In the case of multiple socket-outlets,the test is carried out on one socket-outlet of each type operated and current rating		P
	During the test,no sustained arcing shall occur		P
	After the test,the specimens shall not show:		P
	—wear impairing their further use		P
	—deterioration of enclosures,insulating linings or barriers		P

	—damage to the entry holes for the pins,that might impair proper working		P
	—loosening of electrical or mechanical connections		P
	—seepage of sealing compound		P
	For shuttered socket-outlets,a gauge according to figure 9 is applied to the entry holes corresponding to live contacts		N
	—a force of 20N		N
	—a force of 1N		N
	Temperature rise: (comply with requirements of clause 19)		P
	For the socket-outlets,the test current (A) ,1h	10A	P
	The temperature rise of the terminals shall not exceed 45K		P
	Current:		P
	Separate tests shall be made passing the current through the neutral contact (K)		N
	The adjacent phase contact and through the earthing contact,if any,and nearest phase contact (K)		N
	For socket-outlet(17.2): test voltage (a.c, 1min)		P
	a)test voltage (V) (main contacts)	1500V	P
	b) test voltage (V) (main contact-earthing)	1500V	P
	c) test voltage (V)		N
	d) test voltage (V)		N
	e) test voltage (V)		N
	No flashover or breakdown shall occur during the teat		P
	After the test, fixation socket-outlets according to 13.2		N
	After the test ,portable socket-outlets according to 14.2		P

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
	—damage to the entry holes for the pins,that might impair proper working		P
	—loosening of electrical or mechanical connections		P
	—seepage of sealing compound		P
	For shuttered socket-outlets,a gauge according to figure 9 is applied to the entry holes corresponding to live contacts		N
	—a force of 20N		N
	—a force of 1N		N
	Temperature rise: (comply with requirements of clause 19)		P
	For the socket-outlets,the test current (A) ,1h	10A	P
	The temperature rise of the terminals shall not exceed 45K		P
	Current:		P
	Separate tests shall be made passing the current through the neutral contact (K)		N
	The adjacent phase contact and through the earthing contact,if any,and nearest phase contact (K)		N
	For socket-outlet(17.2): test voltage (a.c, 1min)		P
	a)test voltage (V) (main contacts)	1500V	P
	b) test voltage (V) (main contact-earthing)	1500V	P
	c) test voltage (V)		N
	d) test voltage (V)		N
	e) test voltage (V)		N
	No flashover or breakdown shall occur during the teat		N
	After the test, fixation socket-outlets according to 13.2		P
	After the test ,portable socket-outlets according to 14.2		N
22	**Force necessary to withdraw the plug**		P
	The construction of accessories shall allow for easy insertion and withdraw of the plug, and prevent the plug from working out of the socket-outlet in normal use		P
	The rated current:	16A	-
	Pole:	2	-
22.1	Verification of the maximum withdrawal force		P
	—the maximum withdrawal force (N)		P
	The plug shall not remain in the socket-outlet		P
22.2	Verification of the minimum withdrawal force		P

	—the minimum withdrawal force (N)		P
	The gauge shall not fall from the contact assembly within 30 s		P

23	**Flexible cables and their connection**		P
23.1	Plugs and portable socket-outlets shall be provided with a cord anchorage such that the conductors are relieved from strain,including twisting,where they are connected to the terminals or terminations ,their covering being protected from abrasion		P
	The sheath,if any,of the flexible cable shall be clamped within the cord anchorage		P
23.2	Pull and torque		P
	Non-rewirable accessories:		P
	Type of flexible cable,number of cores and nominal cross-sectional area (mm_2)		-
	Pull (N): 100 times		-
	The flexible cable is subjected for 1min to a torque as specified in table 18		-
	After the test:		P
	The flexible cable shall not have been displaced by more than 2mm		P
	For non-rewirable accessories ,there shall be no break in the electrical connections		P
	The cord anchorage is used in the normal way,clamping screws,if any, being tightened with a torque equal to two- thirds of that specified in table 6		P
	—type of flexible cable,rewirable accessories are first tested with a cable having the smallest nominal cross-sectional area,and then with a cable having the largest nominal cross-sectinal area,as shown in table 17		-
	Pull (N),100 times		-
	A torque as specified in table 18 (Nm)		-
	After the test:		P
	The flexible cable shall not have been displaxed by more than 2mm		P
	The end of the conductors shall not have moved noticeably in the terminals		P
	For a rated current up to and including 16A		P
	Suitable for fitting with the appropriate cable, as shown in table 19		P
	Type of flexible cable,number of cores and nominal cross-sectional area (mm_2)		-
23.3	Non-rewirable plugs and non-rewirable socket-outlets shall be provided with a flexible cable complying with IEC60227 orIEC60245		P
	The flexible cables shall have the same number of conductors as there are poles in the plug or socket-outlet,earthing contacts,being considered as one pole,irrespective of their number		P
	The conductor connected to the earthing contact shall be indentified by the colour combination green/yellow		P

23.4	Non-rewirable plugs and non-rewirable portable socket-outlets shall be designed in such a way that the flexible cable is protected against excessive bending where it enters the accessory		N
	Guards provided for this purpose shall be of insulating material and shall be fixed in a reliable manner		N
	Flexing test:10000 times		N
	Type of flexible cable, nominal cross-sectional area (mm^2)		-
	Test current (A)		-
	Load with a mass:(N)		-
	During the flexing test,no interruption of the current,no short circuit between conductors		N
	The voltage drop between each contact and corresponding conductor,with a test current flowing having a value as prescribed for clause 21,shall not exceed 10mV		N
	After the test,the guard ,shall not have separated from the body and the insulation of the flexible cable show no sign of abrasion or wear ,broken strands of the conductors shall not have pierced the insulation so far as to become accessible		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
24	Mechanical strength		N
	Accessories,surface mounting boxes and screwed glands shall have adequate mechanical strength so as to withstand the stresses imposed during installation and use		N
24.1	Impact-test:9 times		P
	—height of fall :100mm		P
	—height of fall :150mm		P
	—height of fall :200mm		P
	—height of fall :250mm		P
	After the test,the specimen shall no damage within the meaning of this standard,in particular,live parts shall not become accessible		P
24.2	Barrel test:		P
	—number of falls (times)		P
	After the test:		P
	—no part shall have become detached or loosened		P
	—the pins shall not have become so deformed that the plug cannot be introduced into a socket-outlet complying with the relevant standard sheet and also fails comply with the requirements of 9.1 and 10.3		P
	—the pins shall not turn when a torque of 0,4 Nm is applied, first in one direction for 1 min and then in the opposite direction for 1 min		P
24.3	The bases of surface type socket-outlets are first fixed to a culinder of rigid steel sheet,and then fixed in a similar manner to a flat steel sheet		N
	A thread diameter of screws(mm),torque(Nm)		N
	During and after the tests ,the bases of socket-outlets shall no damage impairing their further use		N
24.4	An impact test by means of an apparatus as shown in figure 27		N
	At a temperature of (-15±2)°C,for at least 16 h		N
	Fall from a height of 100mm,falling weight (1000±2)g		N
	After the test,the specimen shall show no damage within the meaning of this standard		N
24.5	Compression test:		N
	The force applied being 300N as shown in figure 8		N
	After the test,the specimen shall show no damage		N
24.6	Torque test values for glands		N

	Diameter of test rod: (mm)		N
	Type of test rod		N
	Torque: (Nm)		N
	After the test,the glands and the enclosures of the specimens shall show no damage within the meaning of this standard		N
24.7	Plug pins provided with insulating sleeves are subjected to the following test by means of an apparatus as shown in figure 28		N
24.8	Shuttered socket-outlets shall have the shutter so designed that it withstands the mechanical force which may be expexted in normal use		N
	One pin from a plug of the same system is applied for 1 min with a force of 40N against the shutter of an wntry hole in a direction perpendicular to the front surface of the socket-outlet		N
	The pin shall not come in contact with live parts		N
	After the test,the specimens shall show no damage within the meaning of this standard		N
24.9	Rewirable multiple portable socket-outlets:mechanical strength		N
	The lightest type of flexible cable of the smallest nominal cross-sectional area specified in table 3 (mm_2)		N
	The specimen is held so that the flexible cable is horizontal and then it is allowed to fall onto a concrete floor,eight times,the flexible cable being rotated through 45°at its fixing after each fall		N
	After the test,the specimens shall show no damage within the meaning of this standard ,in particular,no part shall have become detached or loosened		N
24.10	Test pins of the plug		P
	The plug is placed on a rigid steel plate provided with holes suitable for the pins of the plug ,the pull is applied within a heating cabinet at a temperature of (70±2)°C,1h .a pull P equal to the maximum withdrawal force as given in table 16,for 1min on each pin in turn		P
	After the test,no pin has been displaxed in the body of the plug by more than 1mm		P
24.11	For portable socket-outlet:barriers,between the space intended for the suspension means fixed to the mounting surface and the live parts		N
	A cylindrical steel rod, ,in the most unfavourable position,the force being equal to 1,5 times the maximum plug withdrawal force (as specified in 22.2,table 16)		N
	The rod shall not pierce the barrier		N
24.12	The portable socket-outlet:pull		N
	A pull equal to the force prescribed in 23.2 for checking the flexible cable anchorage is applied,in the most unfavourable position,to the flexible cable for 10 s		N
	During the test, the portable socket-outlet means for suspension on a mounting surface shall not break in a way which allows live parts to become accessible to the standard test finger		N
24.13	The portable socket-outlet:pull		N
	The pull force is applied for 10 s perpendicular to the engagement face of the socket-outlet giving the greatest strain on the suspension mens		N

	During the test, the portable socket-outlet means for suspension on a wall shall not break in a way which allows live parts to become accessible to the test probe B of IEC 61032		N
24.14	Checking the forces necessary to retain or remove covers, cover-plates		N
24.14.1	Verification of the retention of covers or cover-plates		N
	Forces are gradually applied perpendicular to the mounting surface (N) 1min		N
	The covers or cover-plates shall not come off		N
	The test is then repeated on new specimens , (1 ±0,1)mm thick		N
	The covers or cover-plates shall not come off		N
	After the test,the specimens shall show no damage within the meaning of this standard		N
24.14.2	Verification of the removal of covers or cover-plates		N
	A force not exceeding 120N is gradually applied, perpendicular to the mounting/supporting surface,10 times ,the covers or cover-plates shall come off		N
	The test is then repeated on new specimens ,(1 ± 0,1)mm thick		N
	the covers or cover-plates shall come off		N
	After the test,the specimens shall show no damage within the meaning of this standard		N
24.14.3	For plugs and portable socket-outlets, a force is gradually applied until 80n is achieved and maintained for 1 min ,to covers ,cover-plates or parts of them while the other parts of the accessory are fixed		P
24.15	The test is made as described in 24.14		N
24.14.1	Verification of the retention of covers or cover-plates		N
	Forces are gradually applied perpendicular to the mounting surface (N) 1min		N
	The covers or cover-plates shall not come off		N
	The test is then repeated on new specimens ,(1 ± 0,1)mm thick		N
	The covers or cover-plates shall not come off		N
	After the test,the specimens shall show no damage within the meaning of this standard		N
24.14.2	Verification of the removal of covers or cover-plates		N
	A force not exceeding 120N is gradually applied, perpendicular to the mounting/supporting surface,10 times ,the covers or cover-plates shall come off		N
	The test is then repeated on new specimens ,(1 ± 0,1)mm thick		N
	the covers or cover-plates shall come off		N
	After the test,the specimens shall show no damage within the meaning of this standard		N
24.16	The test is made as described in 24.14,but applying ,for 24.14.1,the force of 10 N for all covers or cover-plates		N

	A force not exceeding 120N is gradually applied, perpendicular to the mounting/supporting surface,10 times ,the covers or cover-plates shall come off		N
	The test is then repeated on new specimens ,(1 ± 0,1)mm thick		N
	the covers or cover-plates shall come off		N
	After the test,the specimens shall show no damage within the meaning of this standard		N
24.17	The gauge shown in figure 32 is pushed toward each side of each cover or cover-plate which is fixed without screws on a mounting or supporting surface, as shown in figure 33		N
24.18	A gauge according to figure 35,applied with a force of 1N shall not enter more than 1,0 mm from the upper part of any groove, hole or reverse taper		N

25	**Resistance to heat**		P
25.1	The specimens are kept for 1 h in a heating cabinet at a temperature of (100±2)°C		P
	During the test, they shall not undergo any change impairing their further use and sealing compound, if any, shall not flow to such an extent that live parts are exposed		P
	After the test, markings shall still be legible		P
25.2	Parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position, a mm wide, surrounding the phase and neutral pin entry holes of socket-outlets, shall be subjected to a ball-pressure test. ball-pressure:(125±2)°C,1h		P
	The diameter of the impression caused by the ball is measured and shall not exceed 2mm		P
25.3	Parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though they are in contact with them ,are subjected to a ball-pressure test. ball-pressure test:		N
	Test temperature :(°C)	70 °C	P
	The diameter of the impression caused by the ball is measured and shall not exceed 2mm		P
25.4	Compression test: the test being made in a heating cabinet at a temperature of (80±2)°C,a force of 20N		N
	After the test, the specimens shall show no damage within the meaning of this standard		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
26	**Screws, current-carrying parts and connections**		P
26.1	Connections, electrical or mechanical, shall withstand the mechanical stresses occurring in normal use		P
	Mechanical connections to be used during installation of accessories may be made using thread-forming screws or thread-cutting screws only when the screws are supplied		P
	Thread-cutting screws intended to be used during installation shall be captive with the relevant part of the accessory		P
	Screws or nuts which transmit contact pressure shall be in engagement with a metal thread		P
	Test:		P
	—10 times for screws in engagement with a thread of insulating material and for screws of insulating material		P
	—five times for other cases: nominal diameter of thread (mm),torque (Nm) times		P
	—the thread terminal: nominal diameter of thread (mm),torque (Nm) times	See Table-8	-
	—the earthing terminal: nominal diameter of thread (mm),torque (Nm) times	See Table-8	-
	—the assembly screw: nominal diameter of thread (mm),torque (Nm) times	See Table-8	-
	—the screw with flexible line clamping: diameter(mm),torque (Nm) times	See Table-8	-
	—the else types of screws or nuts: diameter(mm),torque (Nm) times	See Table-8	-
	During the test, no damage impairing the further use of the screwed connections shall occur		P
26.2	For screws in engagement with a thread of insulating material which are operated when mounting the accessory during installation		P
26.3	Electrical connections shall be designed in such a way that contact pressure is not transmitted through insulation material ,unless there is sufficient resiliency in the metallic parts		P

	Connections made by insulation piercing of tinsel cord shall be reliable		N
26.4	Screws and rivets, which serve as electrical as well as mechanical connections ,shall be locked against loosening and/or turning		P
26.5	Current-carrying parts, shall be of metal having mechanical strength, electrical conductivity and resistance to corrosion adequate for their intended use:		N
	—copper		N
	—an alloy containing at least 58% copper for parts made from cold-rolled sheet or at least 50%copper for other parts		N
	—stainless steel containing at least 13% chromium and not more than 0,09% carbon		N
	—steel provided with an electroplated coating of zinc according to ISO 2081,the coating having a thickness of at least		N
	5 pm, ISO no.1 for accessories classified IP code IPX0		N
	12 pm, ISO no.2 for accessories classified IP code IPX4		N
	25 pm, ISO no.3 for accessories classified IP code IPX5		N
	Current-carrying parts which may be subjected to mechanical wear shall not be made of steel provided with an electroplated coating		N
	Under moist conditions, metals showing a great difference of electromechanical potential with respect or each other shall not be used in contact with each other		N
26.6	Contacts which are subjected to a sliding action in normal use shall be of a metal resistant to corrosion		N
26.7	Thread-forming screws and thread-cutting screws shall not be used for the connection of current-carrying parts		P
	Thread-forming screws and thread-cutting screws may be used to provide earthing continutly provided that it is not necessary to disturb the connection in normal use and that at least two screws are for each connection		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
27	**Creepage distances, clearances and distances through sealing compound**		P
27.1	Creepage distances, clearances and distances through sealing compound shall be not less than the values shown in table 23:		P
	1) between live parts of different polarity		P
	2)between live parts and		P
	—accessible surface of parts of insulating material		P
	—earthed metal parts		P
	soc:klt'f'OLrfle?s[S] supporting the base of flush-type		N
	—screws or devices for fixing bases, covers or cover- plates of fixed socket-outlets		N
	—external assembly screws, other than screws which are on the engagement face of plugs and are isolated from the earthing circuit		N
	3) between pins of plugs and metal parts connected to them ,when fully engaged, and a socket-outlet of the same system having accessible unearthed metal parts made according to the most unfavourable construction		P
	4)between the accessible unearthed metal parts of a socket- outlet and a fully engaged plug of the same system having pins and metal parts connected to them made according to the most unfavourable construction		N
	5)between live parts of a socket-outlet or of a plug and their accessible unearthed or functional earthed metal parts		N
	Clearance:		P
	6)between live parts of different polarity		P
	7) between live parts and		P
	—accessible surface of parts of insulating materials		P
	—earthed metal parts not mentioned under items 8 and 9 including parts of earthing circuit		N
	—metal frames supporting the base of flush-type socket-outlets		N

	—screws or devices for fixing bases, covers or cover- plates of fixed socket-outlets		N
	—external assembly screws, other than screws which are on the engagement face of plugs and are isolated from the earthing circuit		N
	8)between live part and		N
	9)between live parts and the surfaces on which the base of a socket-outlet for surface mounting is mounted		N
	10)between live parts and bottom of any conductor recess, if any, in the base of a socket-outlet for surface mounting		N
	11)between live parts covered with at least 2mm of sealing compound and the surface on which the base of a socket-outlet for surface mounting is mounted>3mm or 4mm (mm)		N
	12)between live parts covered with at least 2 mm of sealing compound and bottom of any conductor recess, if any, in the base of a socket-outlet for surface mounting		N
27.2	Insulating sealing compound shall not protrude above the edge of the cavity in which it is contained		N
27.3	Surface-type socket-outlets shall not have bare current-carrying strips at the back		N

TS EN 60884-1			
Madde *Clause*	Kural + Deney *Rule + Test*	Sonuç – Açıklama *Result - Description*	Karar *Verdict*
28	**Resistance of insulating material to abnormal heat, to fire and to tracking**		P
28.1	Resistance to abnormal heat and to fire		P
28.1.1	Glow-wire test:		P
	For parts made of insulating material .necessary to retain current-carrying parts and parts of the earthing circuit of fixed accessories in position .by the test made at 850°C		P
	—there is no visible flame and no sustained glowing		P
	—flames and glowing at the specimen extinguish within 30 s after removal of the glow-wire		P
	—there shall be no ignition of the tissue paper or scorching of the board		P
	For parts of insulating material. necessary to retain current-carrying parts. and parts of the earthing circuit of portable accessories in position. by the test made at a temperature of 750°C		P
	—there is no visible flame and no sustained glowing		P
	—flames and glowing at the specimen extinguish within 30 s after removal of the glow-wire		P
	—there shall be no ignition of the tissue paper or scorching of the board		P
	For parts of insulating material. not necessary to retain current-carrying parts and parts of the earthing circuit in position. even though they are in contact with them. by the test made at a temperature of 650°C		P
	—there is no visible flame and no sustained glowing		P
	—flames and glowing at the specimen extinguish within 30 s after removal of the glow-wire		P
	—there shall be no ignition of the tissue paper or scorching of the board		P
28.1.2	The specimen of a plug with pins provided with insulating sleeves is tested by means of the test apparatus as shown in figure 40		N
28.2	Resistance to tracking :		P
	For accessories having an IP code higher than IPX0.parts of insulating material retaining live parts in position shall be of material resistant to tracking: test voltage; 175V.50 drops .solution A		P
	No flashover or breakdown between electrodes shall occur		P

29	**Resistance to rusting**		N
	Ferrous parts shall be adequately protected against rusting	No ferrous parts	N
	The parts are then immersed for 10 min in a 10% solution of ammonium chloride in water at a temperature of (20±5)°C,after the parts have been for		N
	Their surfaces shall show no signs of rust		N

30	**Additional tests on pins provided with insulating sleeves**		N
	The material of pin-insulating sleeves shall be resistant to the stresses to which it may be subjected at high temperature		N
30.1	Pressure test at high temperature		N
	The specimens are tested by means of the apparatus shown in figure 41		-
	This apparatus has a rectangular blade with an edge 0.7mm wide, to be used in the case of round pins ,or a blade having a round shape ,with a diameter of 6 mm and an edge of 0.7mm,in other cases		N
30.2	Static damp heat test		N
	A set of three specimens is submitted to two damp heat cycles in accordance with IEC 60068-2-30		N
30.3	Test at low temperature		N
	A set of three speciments is maintained at (-15±2)°C		N
	After regaining ambient temperature ,the specimens are submitted to the following tests:		N
	-insulation resistance and electric strength test ,in accordance with clause 17		N
	-abrasion test, in accordance 24.7		N
30.4	Impact test at low temperature		N
	The specimens are subjected to an impact test by means of the apparatus as shown in figure 42. the mass of the falling weight is (100±1))g		N
	The apparatus ,on a sponge rubber pad ,40mm thick, is places , together with the specimens, in a freezer at a temperature of (-15±2) C for at least 25h		N
	At the end of this period, each specimen in turn ,is placed in position, as shown in figure 42		N

Deney fotoğrafları / *Test Photographs* ;