



22/05/2015

Sayı/Issue: 05 06 15 SÖ 074/00

İlgi/Subject:

Interest on request, samples were sent to our laboratory for lighting fixtures, physical examination and tests. The following results were obtained.

**Rapor Tarihi-Report Date / Rapor Numarası-Report Number/ Ticari Marka-TradeMark/Model-Type**

22.06.2015 / 15-122 / ODESEL ELEKTRONİK / AAAA-130-CB30TNN-BBB

AAAA: Ürün Serisi

6101, 6103, 9101, 9102, 9104, 9303, 9700, 9701, 9707

BBB: Işık Dağılımı

015, 024, 036, 048, 120(reflektörsüz)

Numbers in above-mentioned report, the date of the inspection and test reports of the samples will be sent to our letter attached.

Best Regards,

Prof.Dr. Zafer UTLU

Laboratory Manager

EK/EKLER:

(ANNEX/ANNEXES)

Not: Muayene ve Deney amacı ile gönderilen numuneler, firma veya yetkilisi tarafından 30 gün içerisinde alınmadığı takdirde tasfiye edilecektir.

The samples are sent in order to inspection and test, will be liquidated if it will taken back within 30 days by representative of company.



## MUAYENE VE DENEY RAPORU

### TEST REPORT

IAU
15-122
22.06.2015

**Deneyi Talep Eden**

**: ODSEL LEKTRONİK SAN. Ve TİC. A.Ş.**

(Adı,Adresi,Şehir v.b.)

Orta Ölçekli Sanayi Bölgesi, 14.Sokak No:4 Muradiye 45140 Manisa / TÜRKİYE

Customer (Name,Address, City etc.)

**Deney Talep Tarihi /No**

**: 05.06.2015**

Order Date /No

**Numunenin Kabul Tarihi**

**: 05.06.2015**

Test Item Receipt Date

**Deneylerin Yapıldığı Tarih**

**: 22.05.2015**

Date of Test

**Uygulanan Standart /Metod**

**: TS EN13032-1:2004 +A1:2012LightandLighting –Measurement and Presentation of Photometric Data of Lampsand Luminaires-Part1: Measurementand File**

Applied Standart/Method

**Raporun Sayfa Sayısı**

**: 52**

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**

Seal

**Tarih**

Date

**Deney Sorumlusu**

Person in charge of tests

Sercan ÖZKAN

Lab. Tech.

**Kontrol Eden**

Reviewer

Temel SÖNMEZOCAK

Quality Manager

**Onaylayan**

Approved By

Prof.Dr. Zafer UTLU

Lab. Manager

Bu rapor , hazırlayan laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir. Bu rapor , sadece deneyiyapılan numune için geçerlidir ve "Ürün Belgesi" yerine geçmez.

This test report shall not be reproduced other than in full except with the written permission of the laboratory .Test reports without signature and seal are not valid. This report represents only tested samples,and shall not be used as product Certificate.

**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS****FOTOMETRİK ÖLÇÜM SONUÇLARI****PHOTOMETRIC MEASUREMEN RESULTS**

<b>Kullanılan Cihaz/EquipmentUsed.....:</b>	NFMS Goniophotometer LabSphere Sphere System
<b>Uygulanan Standart-Metot/Applied Standard-Method.....:</b>	TS EN13032-1:2004 +A1:2012LightandLighting – Measurementand Presentation of Photometric Data of Lampsand Luminaires-Part1: Measurementand File.
<b>Deney Ortam Şartları/ExperimentalAmbientConditions.....:</b>	25°C ±5°C, 35%RH±5%RH
<b>Armatüre Uygulanan Gerilim / AppliedVoltage.....:</b>	220V
<b>Armatür Markası-Üretici /LuminaireBrand-Producer.....:</b>	ODSEL ELEKTRONİK
<b>Armatür Kodu-Modeli / LuminaireCode-Model.....:</b>	6101-130-CB830TNN-120, 6103-130-CB830TNN-120 9101-130-CB830TNN-120, 9102-130-CB830TNN-120 9104-130-CB830TNN-120, 9303-130-CB830TNN-120 9700-130-CB830TNN-120, 9701-130-CB830TNN-120 9707-130-CB830TNN-120
<b>Armatür Lamba Tipi-açıklama/Lamptype-description of Luminaire.....:</b>	LED

**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

Armatürde Ölçülen Toplam Güç/Measured Total Power of Luminaire.....:	28 W
Armatürün Ölçülen Işık Akısı /Measured Luminous Flux of Luminaire.....:	3145 lm (Effective Value)
Lamba Katalog Işık Akısı / Lamp Catalog Luminous Flux.....:	--
Armatür verimliliği (lm/Watt) / Luminous efficacy.....:	112,32 lm/Watt
Armatür Geri Verim (LOR)% / Luminous efficacy %.....:	--

## FOTOMETRİK ÖLÇÜM BELİRSİZLİK TABLOSU / PHOTOMETRIC MEASUREMENT UNCERTAINTY BUDGET

Deney/Test(Unit)	Ölçüm Belirsizliği/Uncertainty
Radiant Flux (Watt)	1,3%
Luminous flux (Lumen / Lm)	1,08%
Correlated Color Temperature [CCT – Kelvin(K)]	7K
Chromaticity x coord	0,02
Chromaticity y coord	0,02
Chromaticity u' coord	0,02
Chromaticity v' coord	0,02
Color Rendering Index	1,4

İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

Numunenin fotoğrafları / Photos of the Test Sample





# İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

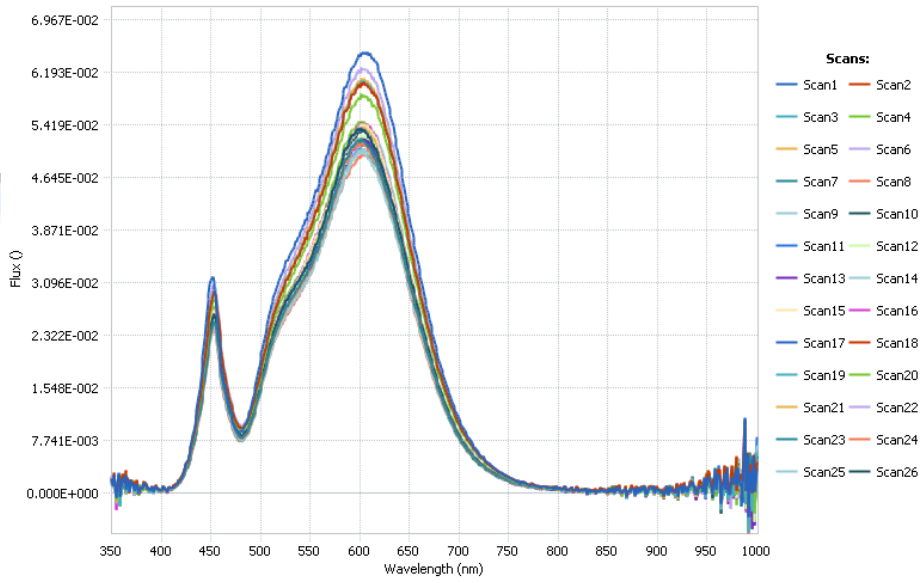
## MUAYENE – DENEY SONUÇLARI / TEST RESULTS

### Fotometrik Ölçümler / Photometric measurements

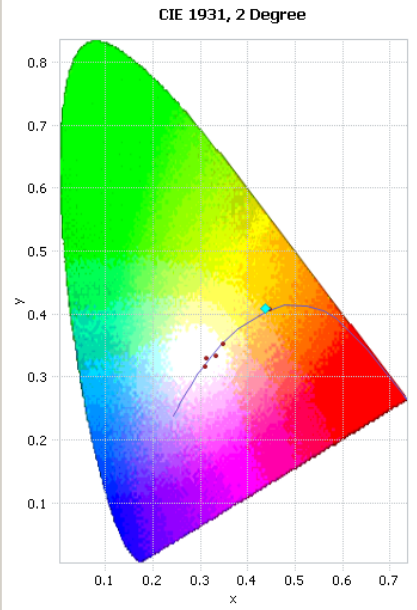
Parameter	
Date/Time	11.06.2015 16:29
Radiant Flux (Watts)	9,75
Luminous Flux (lumens)	3145,00
Scotopic Luminous Flux (lm')	4141,00
Chromaticity x coord	0,4373
Chromaticity y coord	0,4082
Chromaticity u coord	0,2491
Chromaticity v coord	0,3487
Delta uv	0,0015
Chromaticity u' coord	0,2491
Chromaticity v' coord	0,523
Peak Wavelength (nm)	602,3
Center Wavelength (nm)	591,1
Centroid Wavelength (nm)	587,4
Dominant Wavelength (nm)	582,2
Full Width Half Max Bandwidth (nm)	137,5
Excitation Purity (%)	53,8
Correlated Color Temperature (deg. K)	3025
Correlation	0,0054
Correlation Coefficient	0,001581742
Color Rendering Index Average (RA)	82,25537434
Color Rendering Index (R1)	80,3
Color Rendering Index (R2)	88,9
Color Rendering Index (R3)	96,3
Color Rendering Index (R4)	80,9
Color Rendering Index (R5)	79,9
Color Rendering Index (R6)	85,8
Color Rendering Index (R7)	84,8
Color Rendering Index (R8)	61,1
Color Rendering Index (R9)	9,2
Color Rendering Index (R10)	74,2
Color Rendering Index (R11)	79,6
Color Rendering Index (R12)	66,3
Color Rendering Index (R13)	82,1
Color Rendering Index (R14)	97,8

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

▼ SPECTRAL FLUX GRAPH:



▼ CHROMATICITY DIAGRAM:



MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Cone Diagram ;

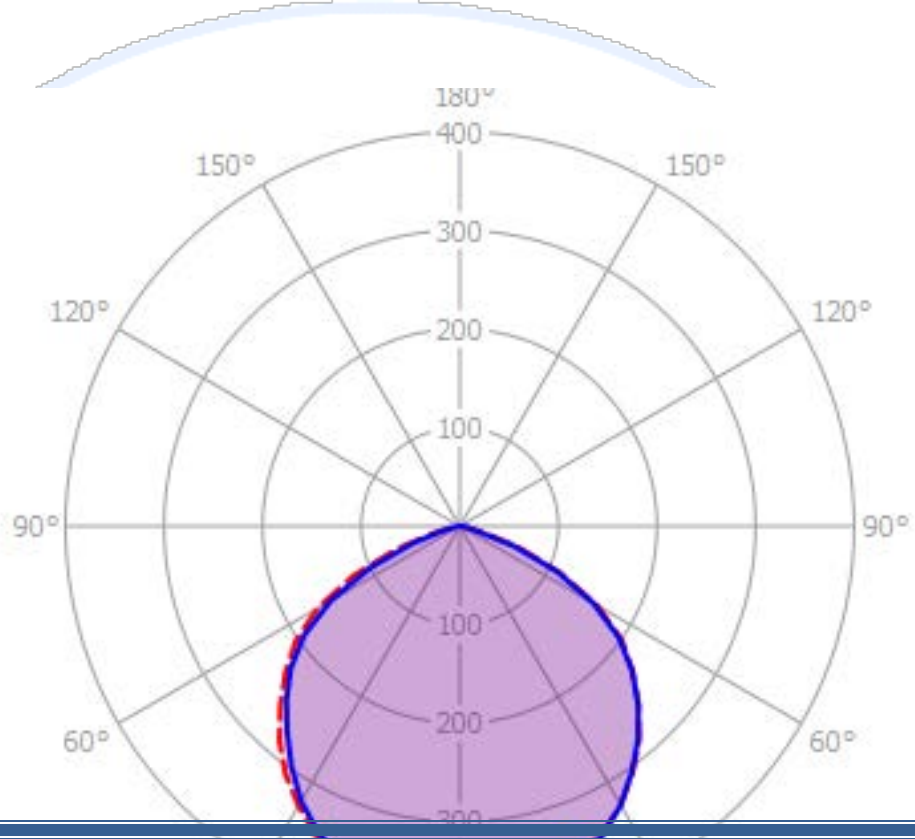




**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

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

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**



**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

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

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**FOTOMETRİK ÖLÇÜM SONUÇLARI**

**PHOTOMETRIC MEASUREMENT RESULTS**

<b>Kullanılan Cihaz/EquipmentUsed.....:</b>	NFMS Goniophotometer LabSphere Sphere System
<b>Uygulanan Standart-Metot/Applied Standard-Method.....:</b>	TS EN13032-1:2004 +A1:2012LightandLighting – Measurementand Presentation of Photometric Data of Lampsand Luminaires-Part1: Measurementand File.
<b>Deney Ortam Şartları/ExperimentalAmbientConditions.....:</b>	25°C ±5°C, 35%RH±5%RH

Armatüre Uygulanan Gerilim / AppliedVoltage.....:	220V
Armatür Markası-Üretici /LuminaireBrand-Producer.....:	ODSEL ELEKTRONİK
Armatür Kodu-Modeli / LuminaireCode-Model.....:	6101-130-CB830TNN-048, 6103-130-CB830TNN-048 9101-130-CB830TNN-048, 9102-130-CB830TNN-048 9104-130-CB830TNN-048, 9303-130-CB830TNN-048 9700-130-CB830TNN-048, 9701-130-CB830TNN-048 9707-130-CB830TNN-048
Armatür Lamba Tipi-açıklama/Lamptype-description of Luminaire.....:	LED SPOT

**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**  
( *ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES* )

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

*FOTOMETRİK ÖLÇÜM SONUÇLARI / PHOTOMETRIC MEASUREMENT RESULTS*

Armatürde Ölçülen Toplam Güç/Measured Total Power of Luminaire.....:	28 W
Armatürün Ölçülen Işık Akısı /MeasuredLuminousFlux of Luminaire.....:	2698 lm (Effective Value)
Lamba Katalog Işık Akısı / LampCatalogLuminousFlux.....:	--
Armatür verimliliği (lm/Watt) / Luminousefficacy.....:	96,35 lm/Watt

Armatür Geri Verim (LOR)% / Luminousefficacy %.....: --

**FOTOMETRİK ÖLÇÜM BELİRSİZLİK TABLOSU / PHOTOMETRIC MEASUREMENT UNCERTAINTY BUDGET**

Deney/Test(Unit)	Ölçüm Belirsizliği/Uncertainty
Radiant Flux (Watt)	1,3%
Luminous flux (Lumen / Lm)	1,08%
Correlated Color Temperature [CCT – Kelvin(K)]	7K
Chromaticity x coord	0,02
Chromaticity y coord	0,02
Chromaticity u' coord	0,02
Chromaticity v' coord	0,02
Color Rendering Index	1,4

**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

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

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**Numunenin fotoğrafları / Photos of the Test Sample**



**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

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

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

## Fotometrik Ölçümler / Photometric measurements

Parameter	Scan 10
Date/Time	11.06.2015 16:34
Radiant Flux (Watts)	8,31
Luminous Flux (lumens)	2698,00
Scotopic Luminous Flux (lm')	3564,00
Chromaticity x coord	0,4361
Chromaticity y coord	0,4093
Chromaticity u coord	0,2478
Chromaticity v coord	0,3489
Delta uv	0,0021
Chromaticity u' coord	0,2478
Chromaticity v' coord	0,5233
Peak Wavelength (nm)	596,6
Center Wavelength (nm)	589,8
Centroid Wavelength (nm)	587,2
Dominant Wavelength (nm)	581,8
Full Width Half Max Bandwidth (nm)	137,9
Excitation Purity (%)	53,8
Correlated Color Temperature (deg. K)	3053
Correlation	0,0054
Correlation Coefficient	0,002178797
Color Rendering Index Average (RA)	81,50140775
Color Rendering Index (R1)	79,2
Color Rendering Index (R2)	88,3
Color Rendering Index (R3)	96,5
Color Rendering Index (R4)	80,1
Color Rendering Index (R5)	78,9
Color Rendering Index (R6)	85,2
Color Rendering Index (R7)	84,3
Color Rendering Index (R8)	59,4
Color Rendering Index (R9)	4,8
Color Rendering Index (R10)	73,3
Color Rendering Index (R11)	78,9
Color Rendering Index (R12)	65,2
Color Rendering Index (R13)	81,1
Color Rendering Index (R14)	98

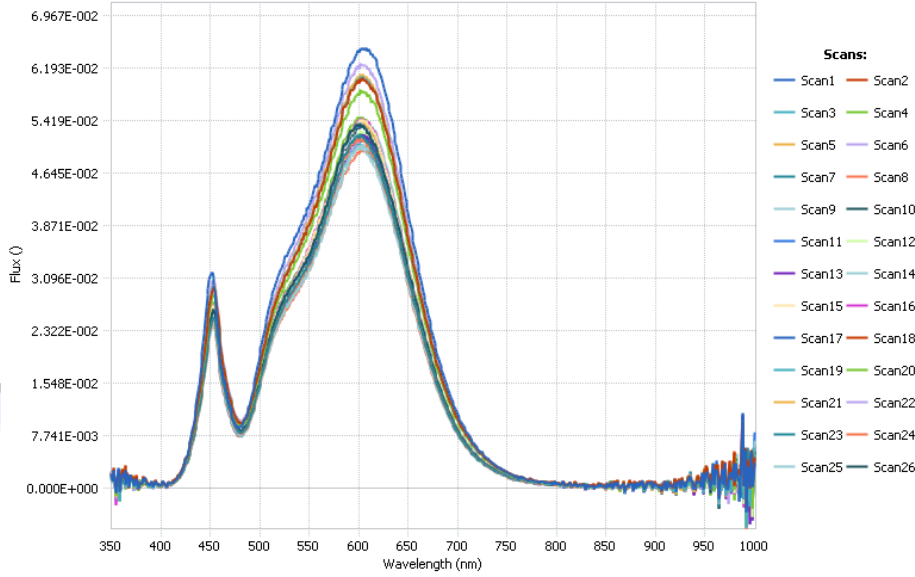
### İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

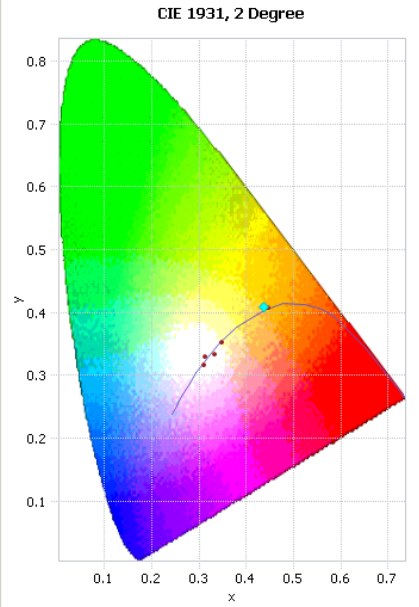
### MUAYENE – DENEY SONUÇLARI / TEST RESULTS



▼ SPECTRAL FLUX GRAPH:



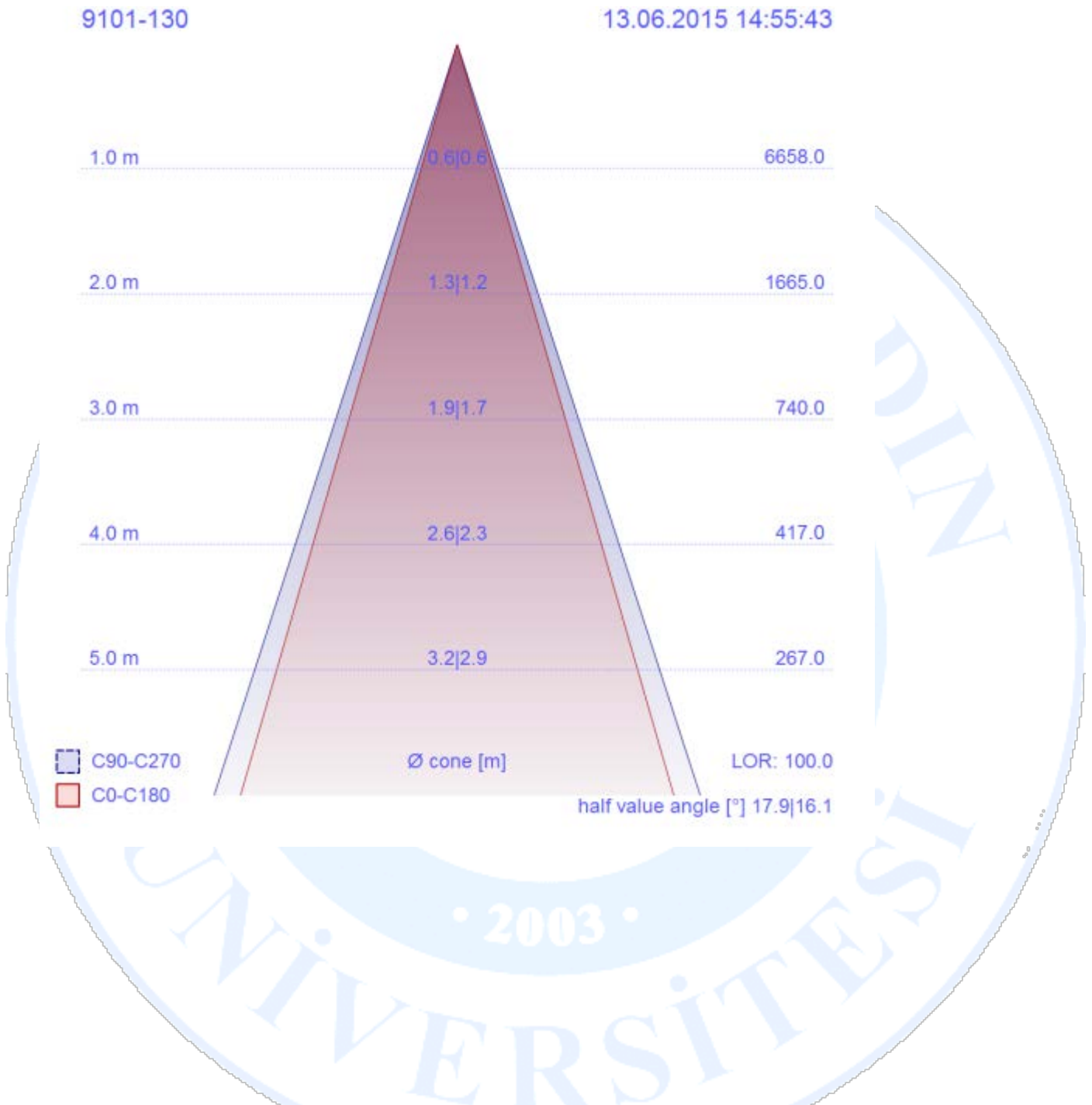
▼ CHROMATICITY DIAGRAM:



İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI  
( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

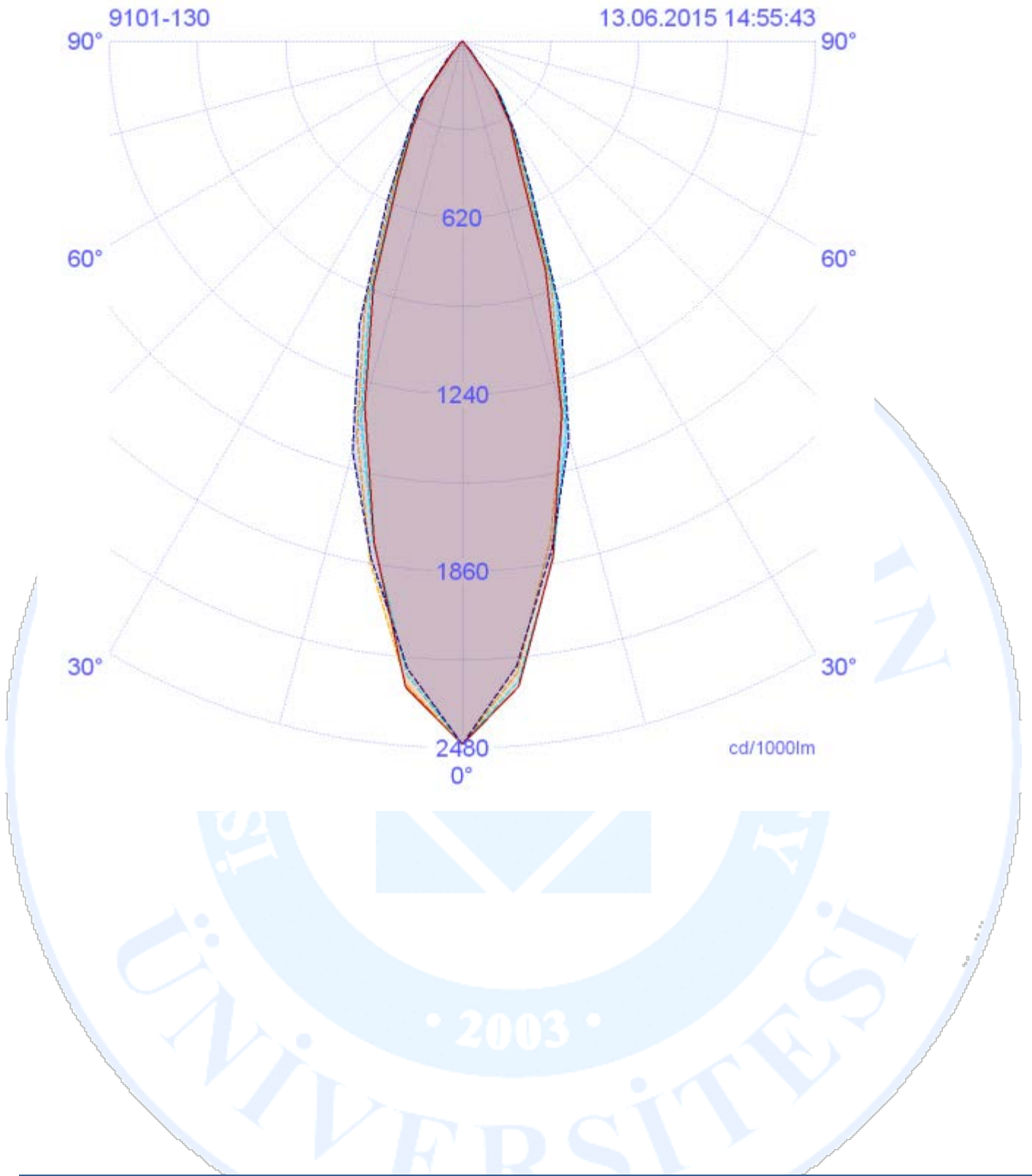
### Cone Diagram ;



İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

## MUAYENE – DENEY SONUÇLARI / TEST RESULTS



**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**FOTOMETRİK ÖLÇÜM SONUÇLARI**

**PHOTOMETRIC MEASUREMMENT RESULTS**

<b>Kullanılan Cihaz/EquipmentUsed.....:</b>	NFMS Goniophotometer LabSphere Sphere System
<b>Uygulanan Standart-Metot/Applied Standard-Method.....:</b>	TS EN13032-1:2004 +A1:2012LightandLighting – Measurementand Presentation of Photometric Data of Lampsand Luminaires-Part1: Measurementand File.
<b>Deney Ortam Şartları/ExperimentalAmbientConditions.....:</b>	25°C ±5°C, 35%RH±5%RH
<b>Armatüre Uygulanan Gerilim / AppliedVoltage.....:</b>	220V
<b>Armatür Markası-Üretici /LuminaireBrand-Producer.....:</b>	ODSEL LEKTRONİK
<b>Armatür Kodu-Modeli / LuminaireCode-Model.....:</b>	6101-130-CB830TNN-036, 6103-130-CB830TNN-036 9101-130-CB830TNN-036, 9102-130-CB830TNN-036 9104-130-CB830TNN-036, 9303-130-CB830TNN-036 9700-130-CB830TNN-036, 9701-130-CB830TNN-036 9707-130-CB830TNN-036
<b>Armatür Lamba Tipi-açıklama/Lamptype-description of Luminaire.....:</b>	LED SPOT

## İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

### MUAYENE – DENEY SONUÇLARI / TEST RESULTS

#### FOTOMETRİK ÖLÇÜM SONUÇLARI / PHOTOMETRIC MEASUREMENT RESULTS

<b>Armatürde Ölçülen Toplam Güç/Measured Total Power of Luminaire.....:</b>	28 W
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Armatürün Ölçülen Işık Akısı / Measured Luminous Flux of Luminaire.....:	2800 lm (Effective Value)
Lamba Katalog Işık Akısı / Lamp Catalog Luminous Flux.....:	--
Armatür verimliliği (lm/Watt) / Luminous efficacy.....:	100 lm/Watt
Armatür Geri Verim (LOR)% / Luminous efficacy %.....:	--

**FOTOMETRİK ÖLÇÜM BELİRSİZLİK TABLOSU / PHOTOMETRIC MEASUREMENT UNCERTAINTY BUDGET**

Deney/Test(Unit)	Ölçüm Belirsizliği/Uncertainty
Radiant Flux (Watt)	1,3%
Luminous flux (Lumen / lm)	1,08%
Correlated Color Temperature [CCT – Kelvin(K)]	7K
Chromaticity x coord	0,02
Chromaticity y coord	0,02
Chromaticity u' coord	0,02
Chromaticity v' coord	0,02
Color Rendering Index	1,4

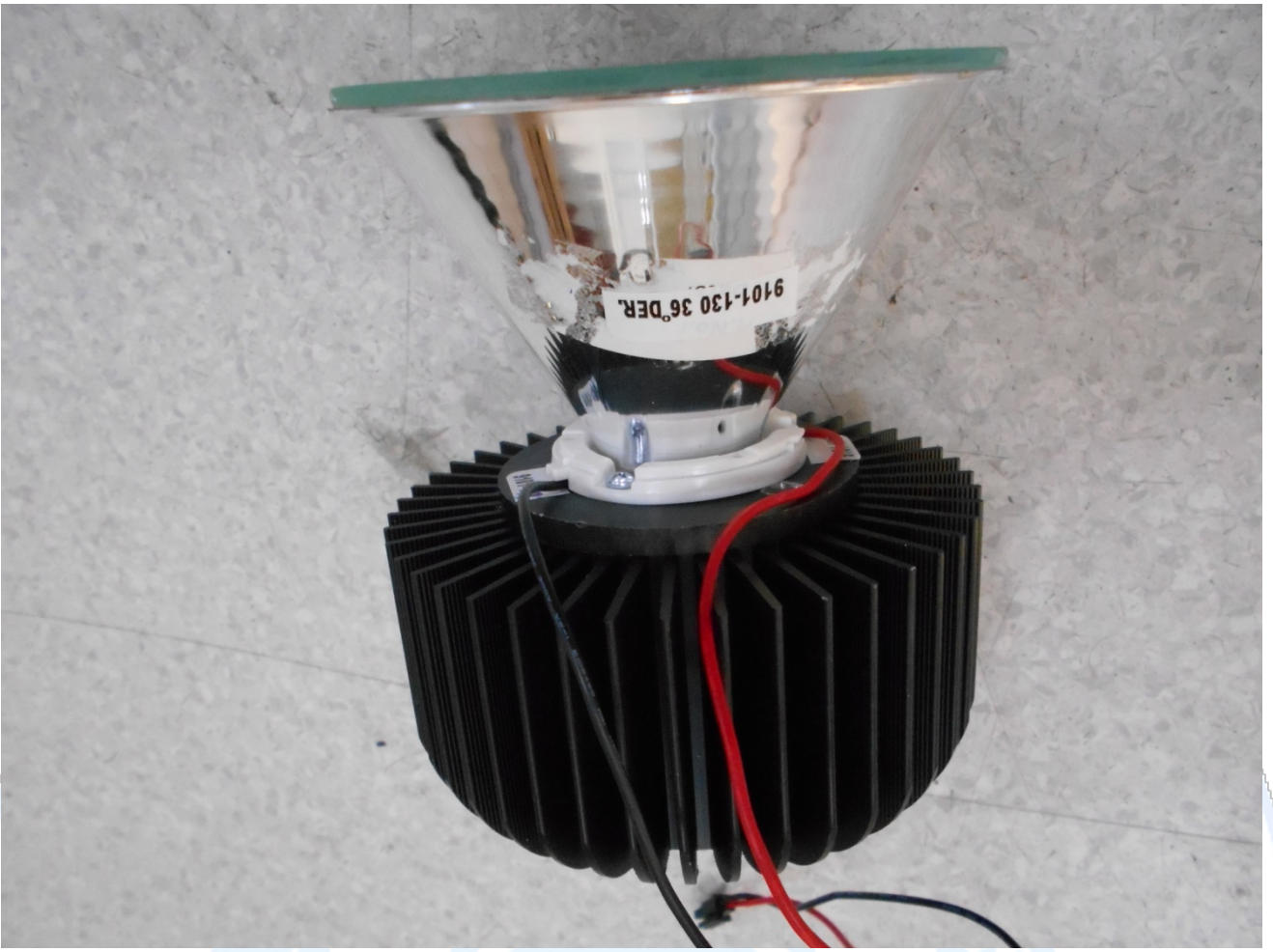
**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**Numunenin fotoğrafları / Photos of the Test Sample**





**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

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

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**Fotometrik Ölçümler / Photometric measurements**

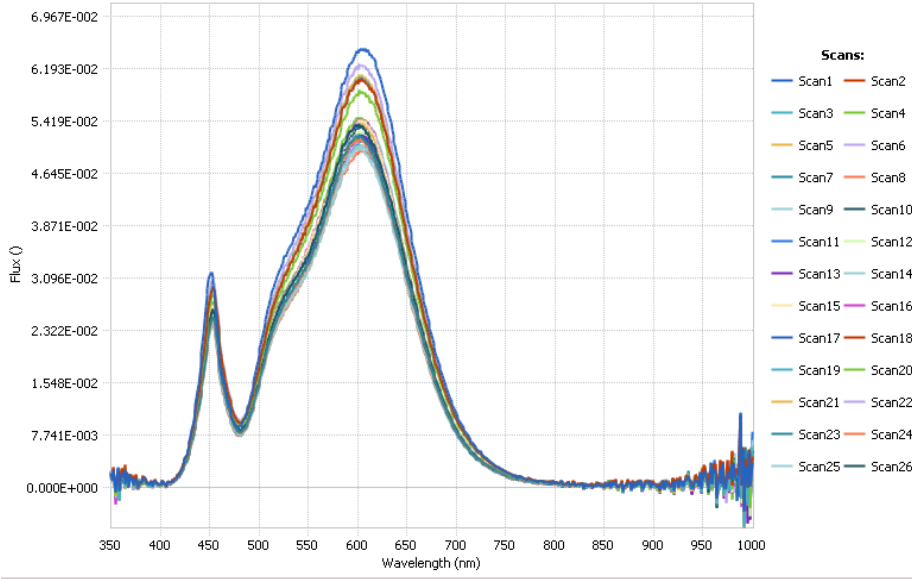
Parameter	Scan 16
Date/Time	11.06.2015 16:43
Radiant Flux (Watts)	8,44
Luminous Flux (lumens)	2800
Scotopic Luminous Flux (lm')	3625,00
Chromaticity x coord	0,436
Chromaticity y coord	0,409
Chromaticity u coord	0,2479
Chromaticity v coord	0,3488
Delta uv	0,0021
Chromaticity u' coord	0,2479
Chromaticity v' coord	0,5232
Peak Wavelength (nm)	603
Center Wavelength (nm)	589,8
Centroid Wavelength (nm)	587
Dominant Wavelength (nm)	581,9
Full Width Half Max Bandwidth (nm)	138,1
Excitation Purity (%)	53,7
Correlated Color Temperature (deg. K)	3053
Correlation	0,0054
Correlation Coefficient	0,002104267
Color Rendering Index Average (RA)	82,0421354
Color Rendering Index (R1)	80,1
Color Rendering Index (R2)	88,6
Color Rendering Index (R3)	96,2
Color Rendering Index (R4)	80,9
Color Rendering Index (R5)	79,6
Color Rendering Index (R6)	85,5
Color Rendering Index (R7)	84,8
Color Rendering Index (R8)	60,7
Color Rendering Index (R9)	7,4
Color Rendering Index (R10)	73,5
Color Rendering Index (R11)	79,7
Color Rendering Index (R12)	65,5
Color Rendering Index (R13)	81,8
Color Rendering Index (R14)	97,7

**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

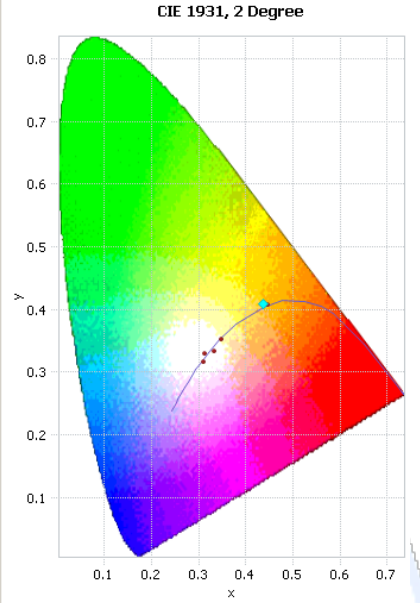
**( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)**

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

▼ SPECTRAL FLUX GRAPH:



▼ CHROMATICITY DIAGRAM:

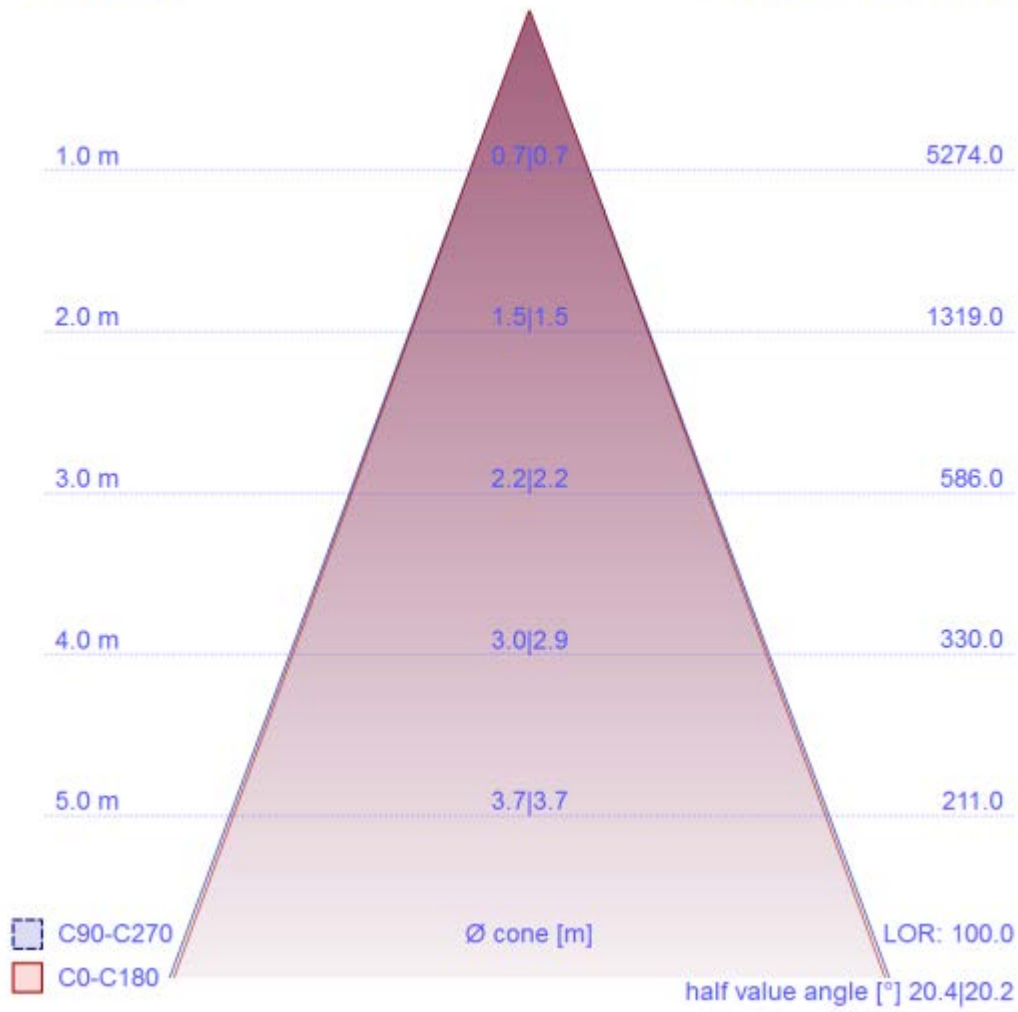


İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

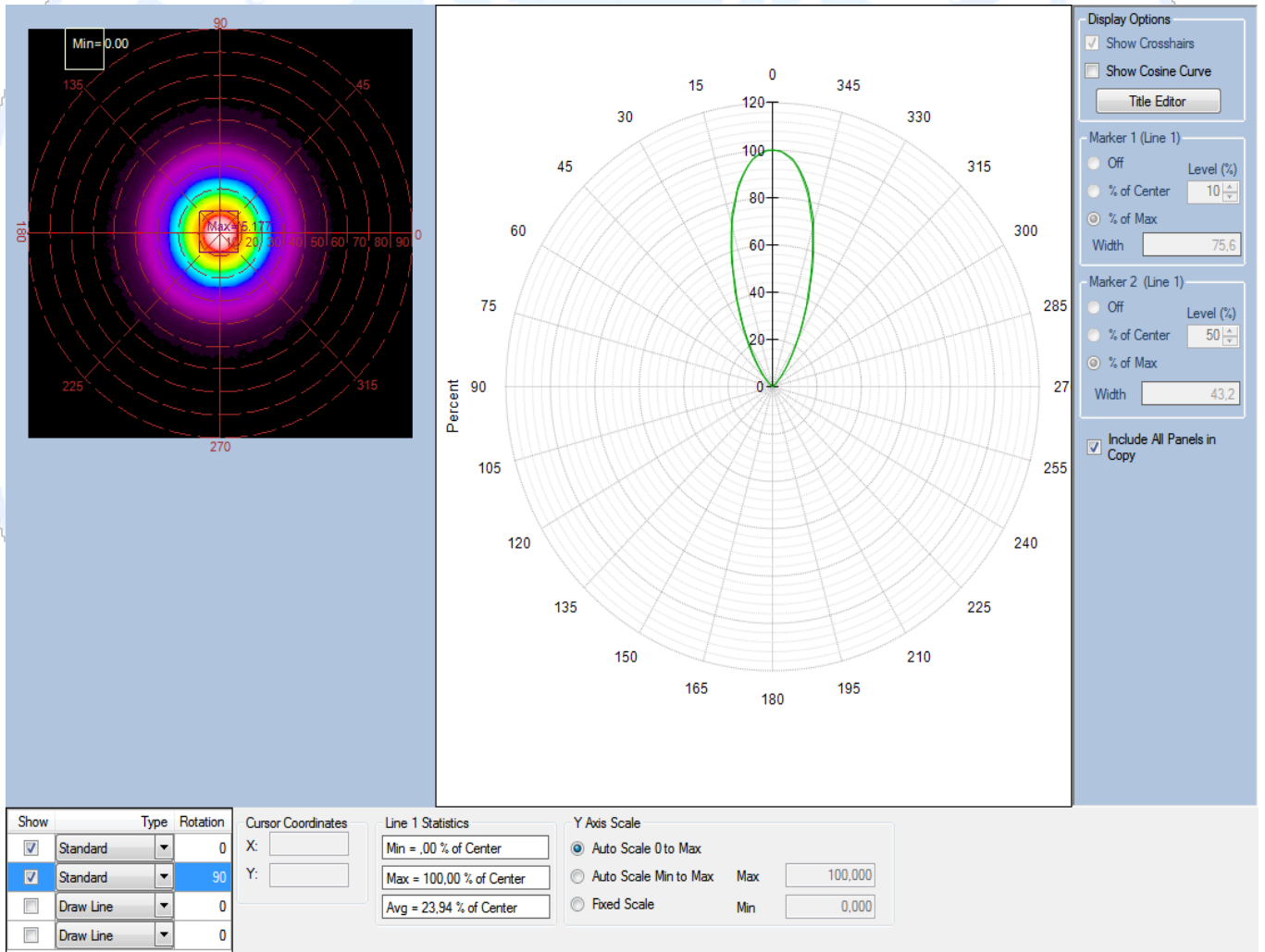
( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Cone Diagram ;

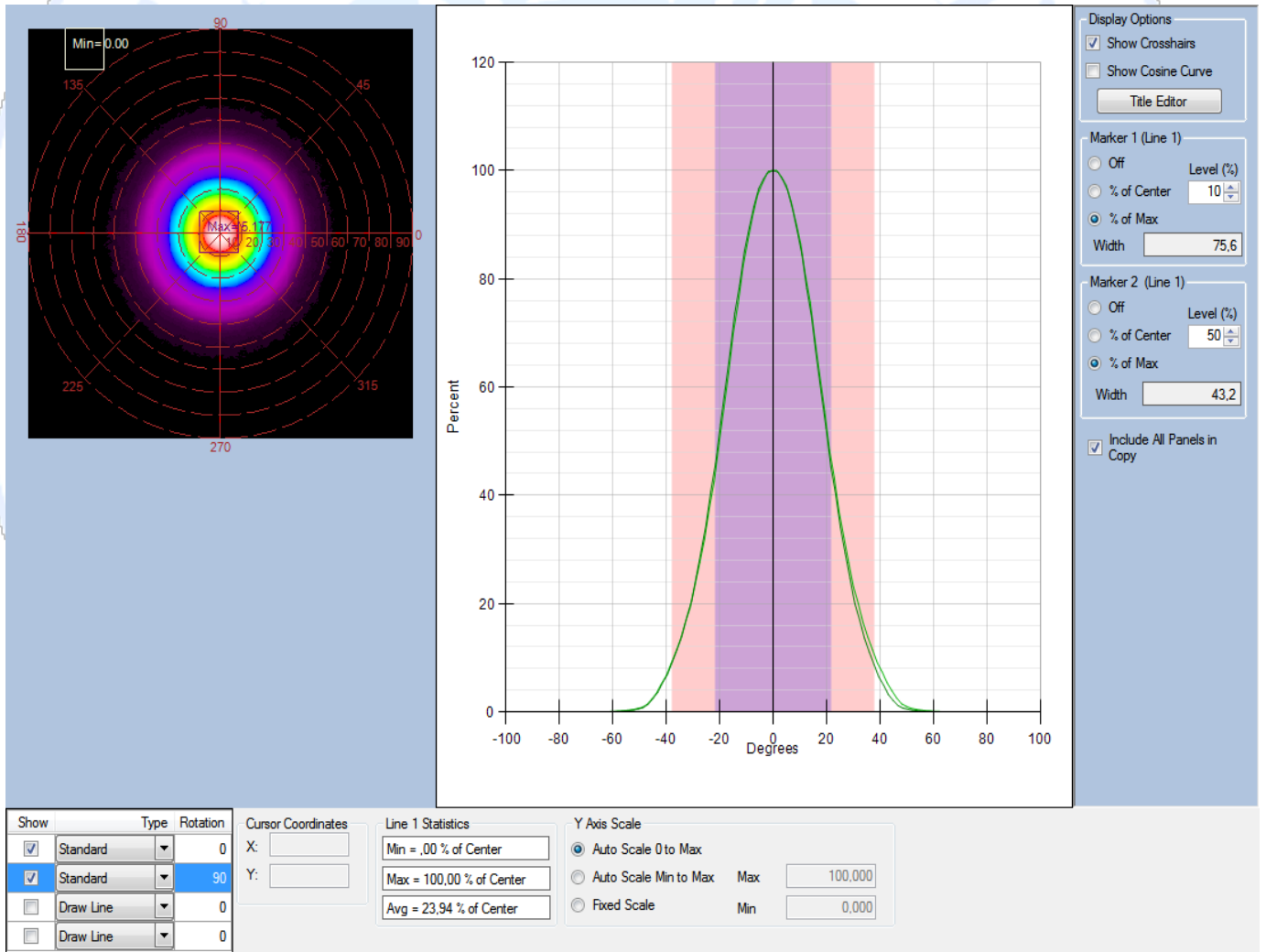


MUAYENE – DENEY SONUÇLARI / TEST RESULTS



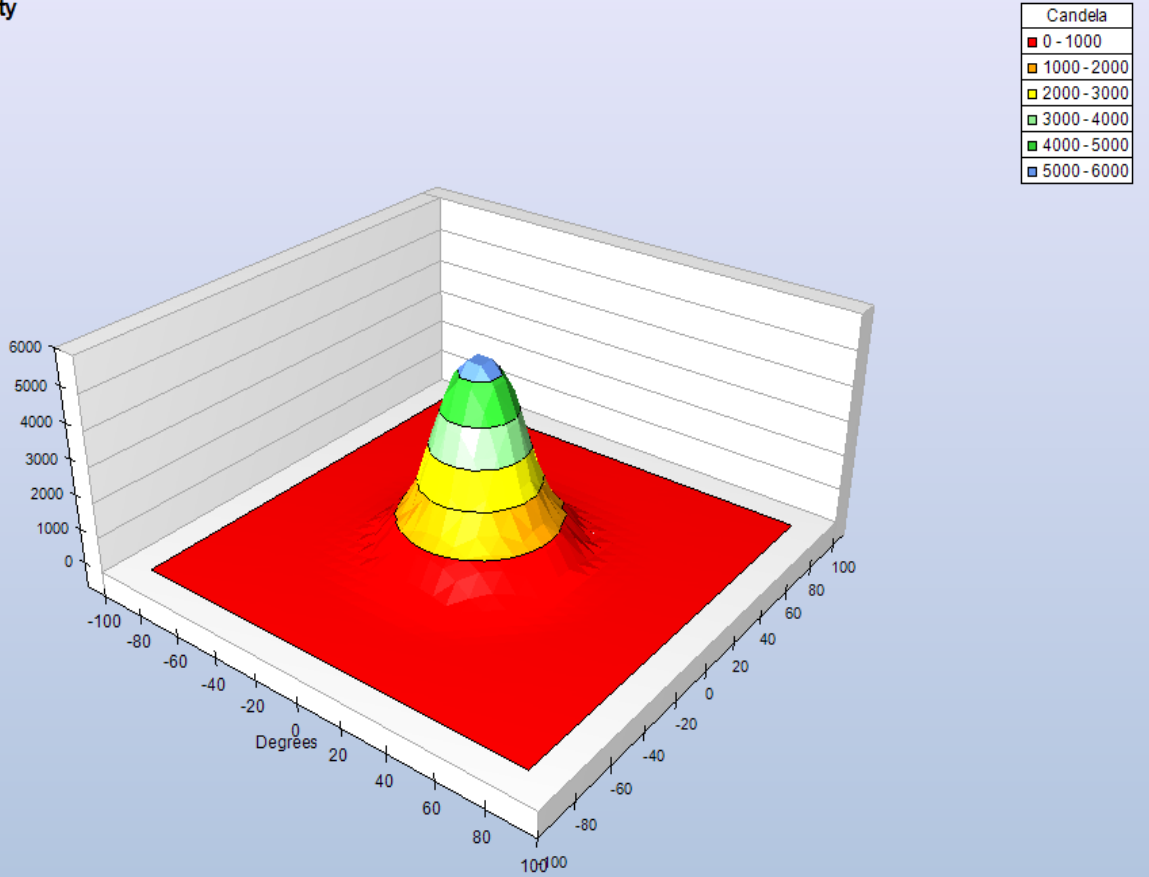


MUAYENE – DENEY SONUÇLARI / TEST RESULTS

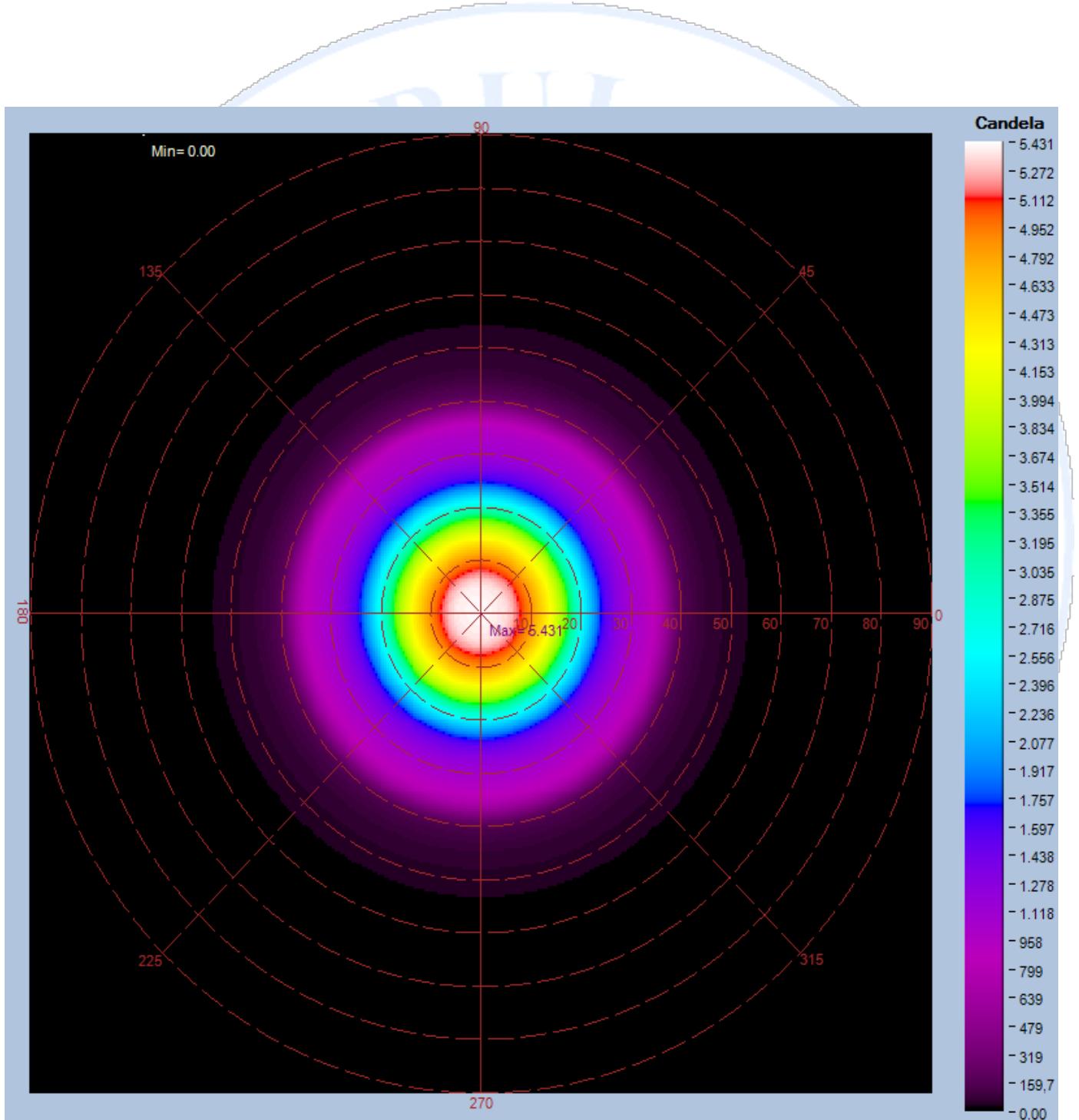


MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Luminous Intensity



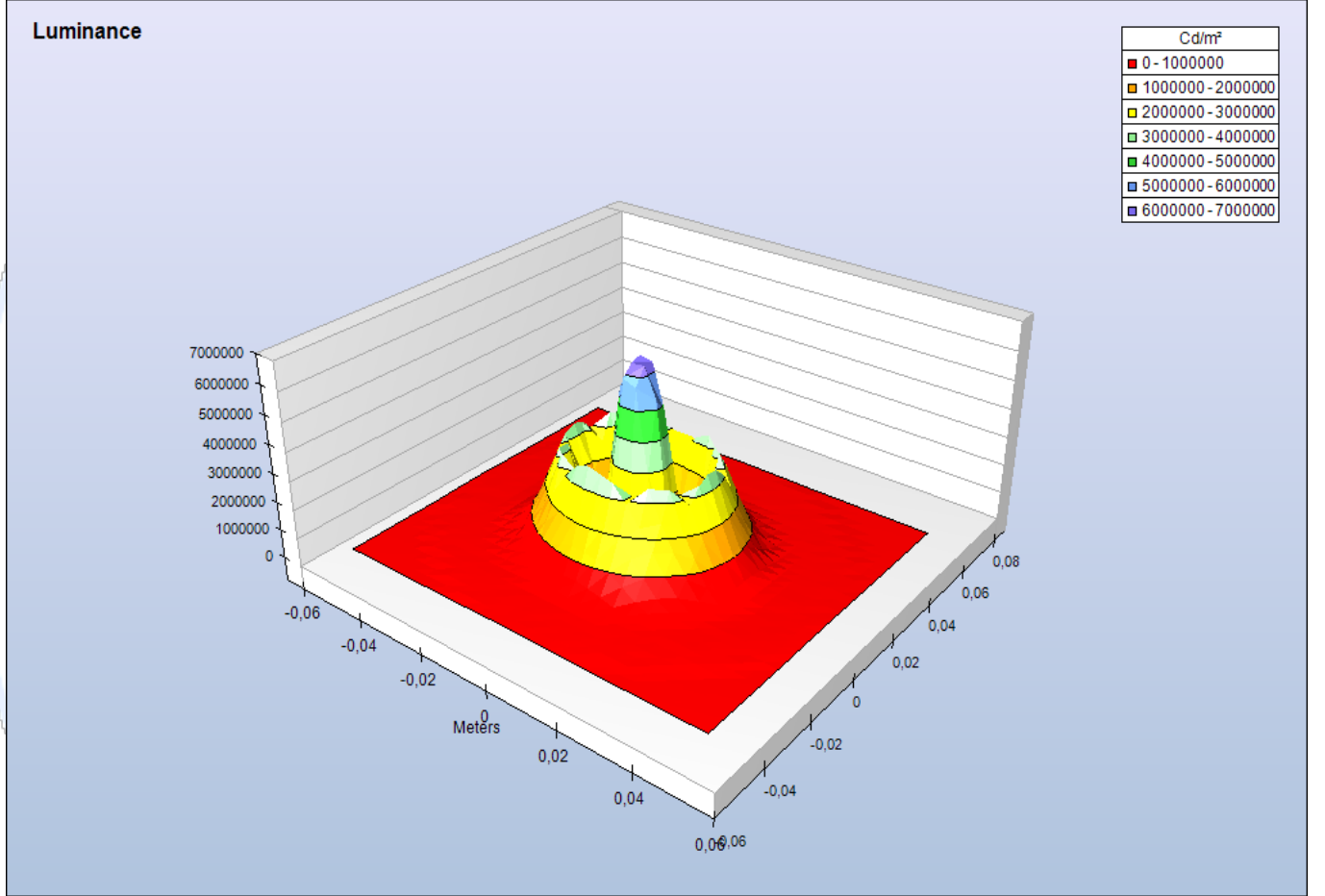
MUAYENE – DENEY SONUÇLARI / TEST RESULTS



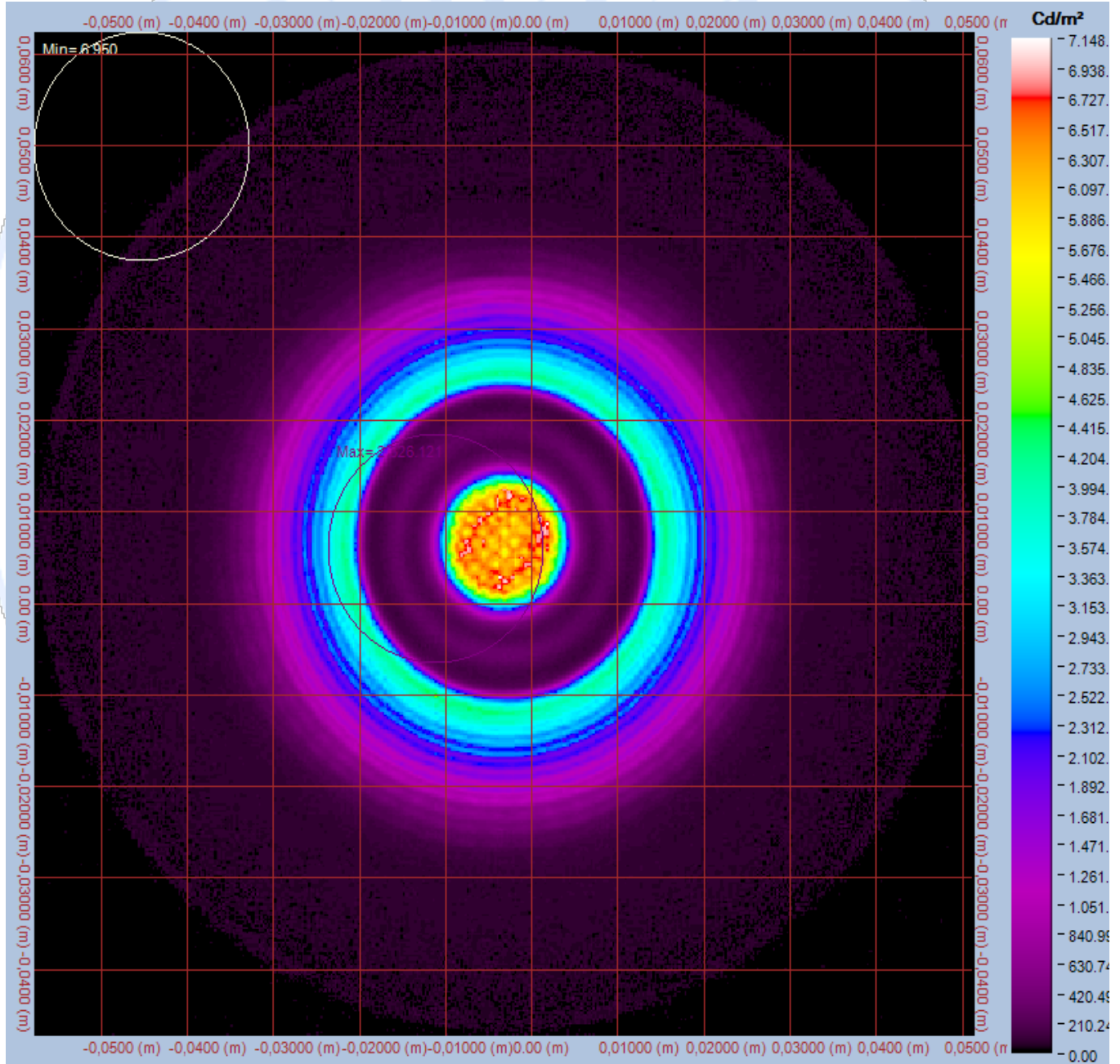
**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

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

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**



MUAYENE – DENEY SONUÇLARI / TEST RESULTS





**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS****FOTOMETRİK ÖLÇÜM SONUÇLARI****PHOTOMETRIC MEASUREMEN RESULTS**

<b>Kullanılan Cihaz/EquipmentUsed.....:</b>	NFMS Goniophotometer LabSphere Sphere System
<b>Uygulanan Standart-Metot/Applied Standard-Method.....:</b>	TS EN13032-1:2004 +A1:2012LightandLighting – Measurementand Presentation of Photometric Data of Lampsand Luminaires-Part1: Measurementand File.
<b>Deney Ortam Şartları/ExperimentalAmbientConditions.....:</b>	25°C ±5°C, 35%RH±5%RH
<b>Armatüre Uygulanan Gerilim / AppliedVoltage.....:</b>	220V
<b>Armatür Markası-Üretici /LuminaireBrand-Producer.....:</b>	ODSEL LEKTRONİK
<b>Armatür Kodu-Modeli / LuminaireCode-Model.....:</b>	6101-130-CB830TNN-024, 6103-130-CB830TNN-024 9101-130-CB830TNN-024, 9102-130-CB830TNN-024 9104-130-CB830TNN-024, 9303-130-CB830TNN-024 9700-130-CB830TNN-024, 9701-130-CB830TNN-024 9707-130-CB830TNN-024
<b>Armatür Lamba Tipi-açıklama/Lamptype-description of Luminaire.....:</b>	LED SPOT

## MUAYENE – DENEY SONUÇLARI / TEST RESULTS

## FOTOMETRİK ÖLÇÜM SONUÇLARI / PHOTOMETRIC MEASUREMENT RESULTS

Armatürde Ölçülen Toplam Güç/Measured Total Power of Luminaire.....:	28 W
Armatürün Ölçülen Işık Akısı /Measured Luminous Flux of Luminaire.....:	2756 lm (Effective Value)
Lamba Katalog Işık Akısı / Lamp Catalog Luminous Flux.....:	--
Armatür verimliliği (lm/Watt) / Luminous efficacy.....:	98,42 lm/Watt
Armatür Geri Verim (LOR)% / Luminous efficacy %.....:	--

## FOTOMETRİK ÖLÇÜM BELİRSİZLİK TABLOSU / PHOTOMETRIC MEASUREMENT UNCERTAINTY BUDGET

Deney/Test(Unit)	Ölçüm Belirsizliği/Uncertainty
Radiant Flux (Watt)	1,3%
Luminous flux (Lumen / lm)	1,08%
Correlated Color Temperature [CCT – Kelvin(K)]	7K
Chromaticity x coord	0,02
Chromaticity y coord	0,02
Chromaticity u' coord	0,02
Chromaticity v' coord	0,02
Color Rendering Index	1,4

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**Numunenin fotoğrafları / Photos of the Test Sample**

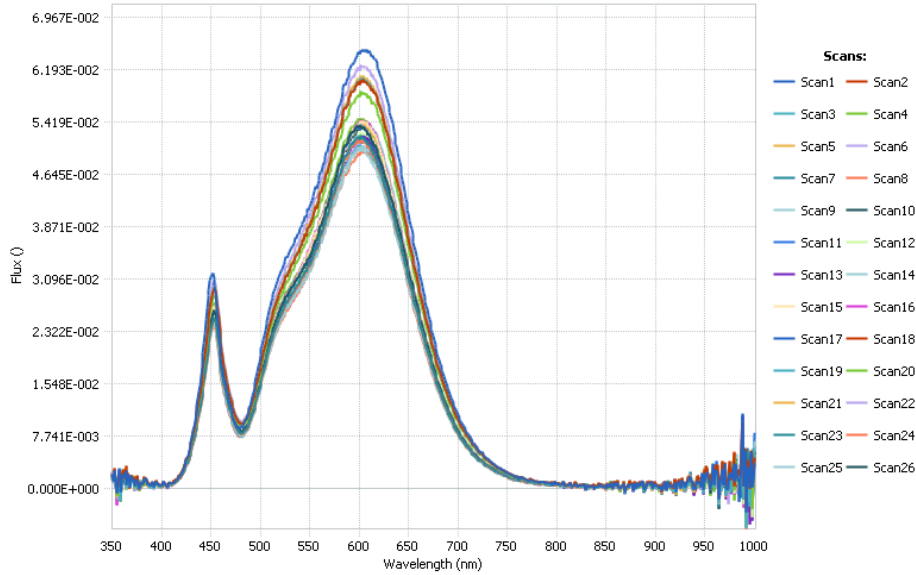


**MUAYENE – DENEY SONUÇLARI / TEST RESULTS****Fotometrik Ölçümler / Photometric measurements**

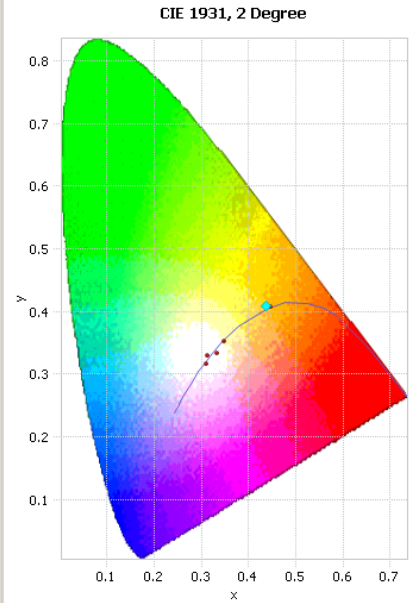
Parameter	Scan 20
Date/Time	11.06.2015 16:59
Radiant Flux (Watts)	8,44
Luminous Flux (lumens)	2756,00
Scotopic Luminous Flux (lm')	3641,00
Chromaticity x coord	0,4362
Chromaticity y coord	0,4094
Chromaticity u coord	0,2478
Chromaticity v coord	0,3489
Delta uv	0,0022
Chromaticity u' coord	0,2478
Chromaticity v' coord	0,5233
Peak Wavelength (nm)	600,9
Center Wavelength (nm)	589,8
Centroid Wavelength (nm)	585,7
Dominant Wavelength (nm)	581,8
Full Width Half Max Bandwidth (nm)	138,3
Excitation Purity (%)	53,8
Correlated Color Temperature (deg. K)	3053
Correlation	0,0054
Correlation Coefficient	0,002210297
Color Rendering Index Average (RA)	81,63514611
Color Rendering Index (R1)	79,4
Color Rendering Index (R2)	88,3
Color Rendering Index (R3)	96,4
Color Rendering Index (R4)	80,3
Color Rendering Index (R5)	79,1
Color Rendering Index (R6)	85,2
Color Rendering Index (R7)	84,5
Color Rendering Index (R8)	59,8
Color Rendering Index (R9)	5,5
Color Rendering Index (R10)	73,3
Color Rendering Index (R11)	79,2
Color Rendering Index (R12)	65,1
Color Rendering Index (R13)	81,2
Color Rendering Index (R14)	97,9

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

▼ SPECTRAL FLUX GRAPH:



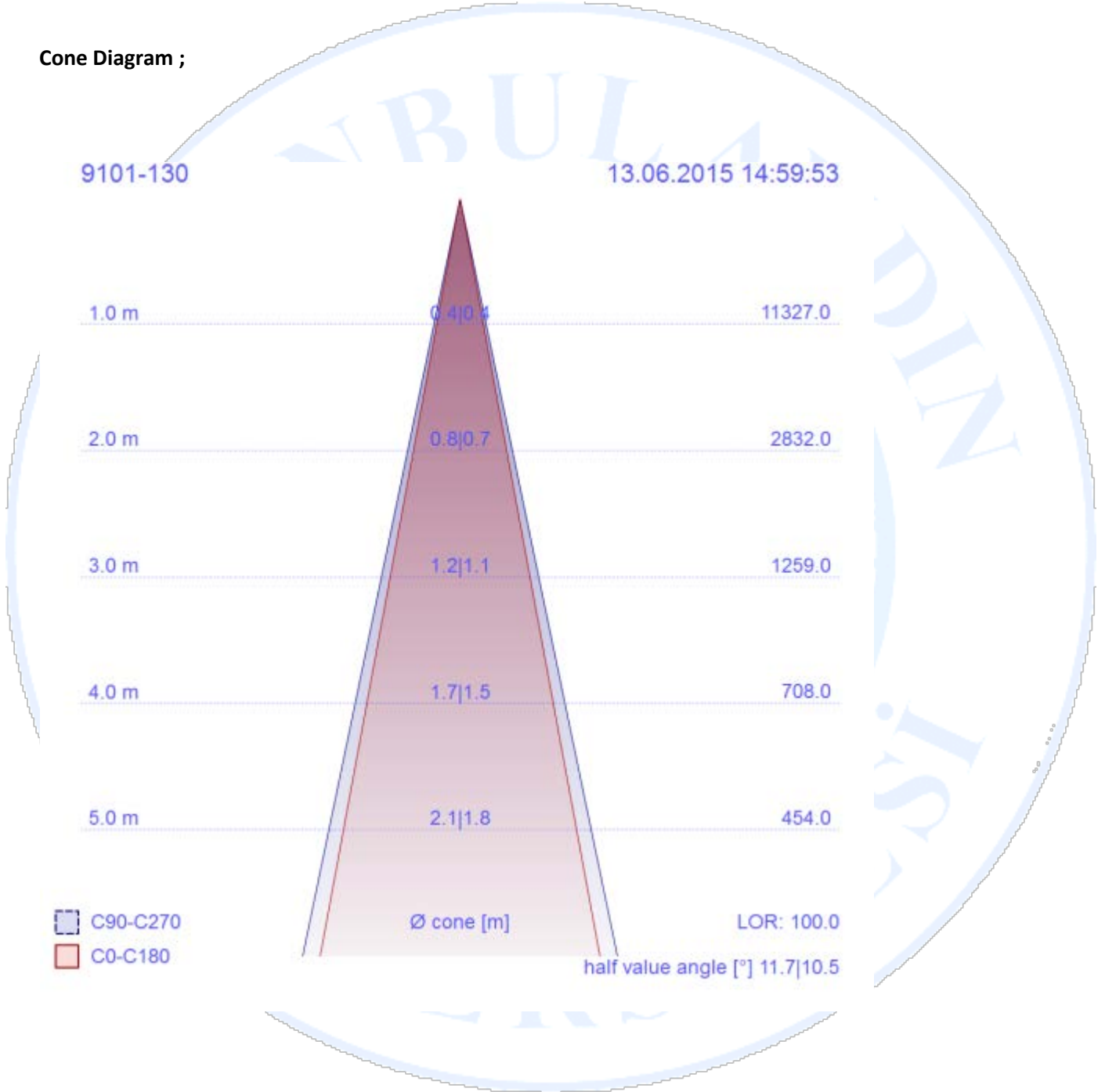
▼ CHROMATICITY DIAGRAM:





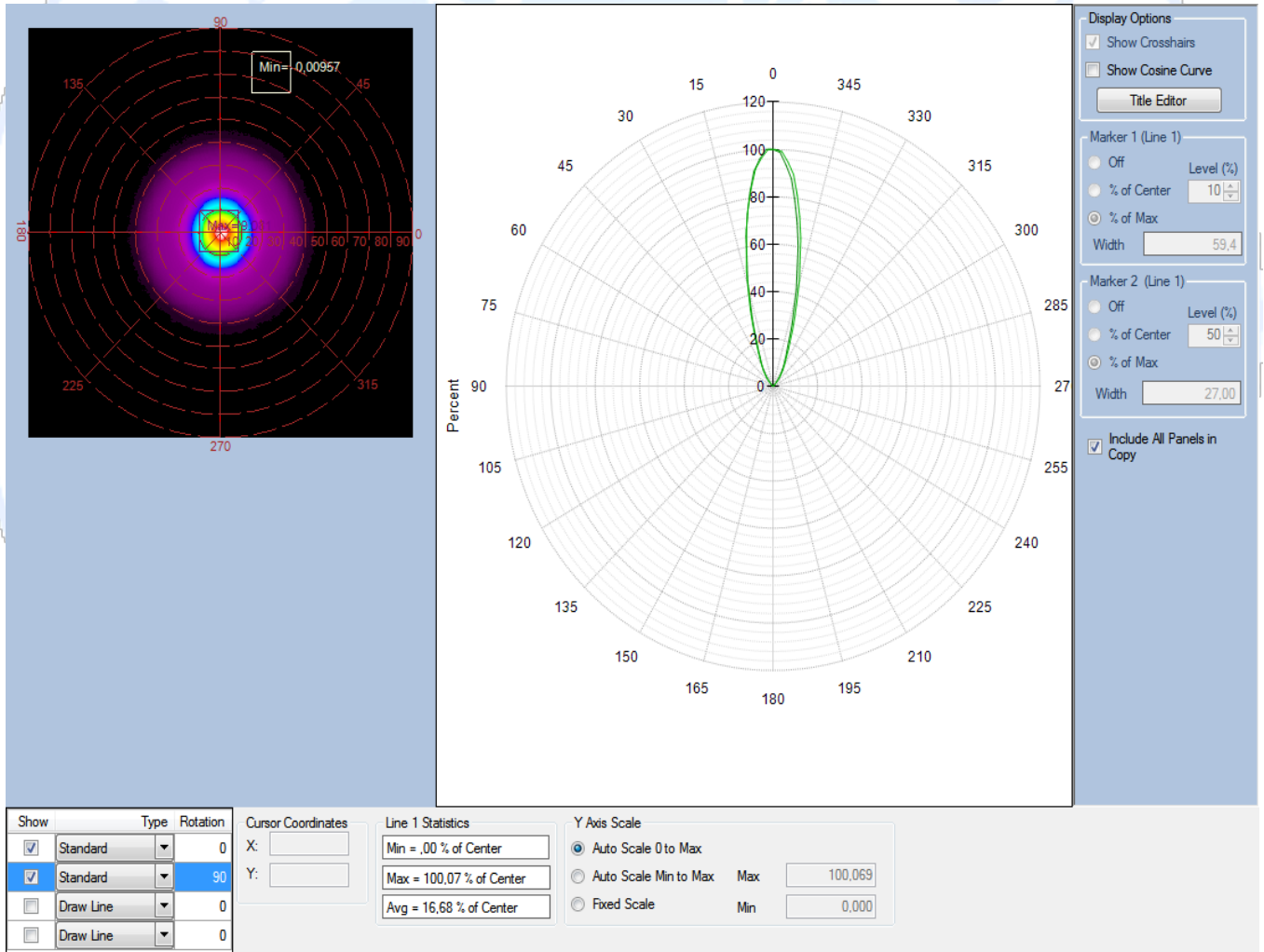
MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Cone Diagram ;

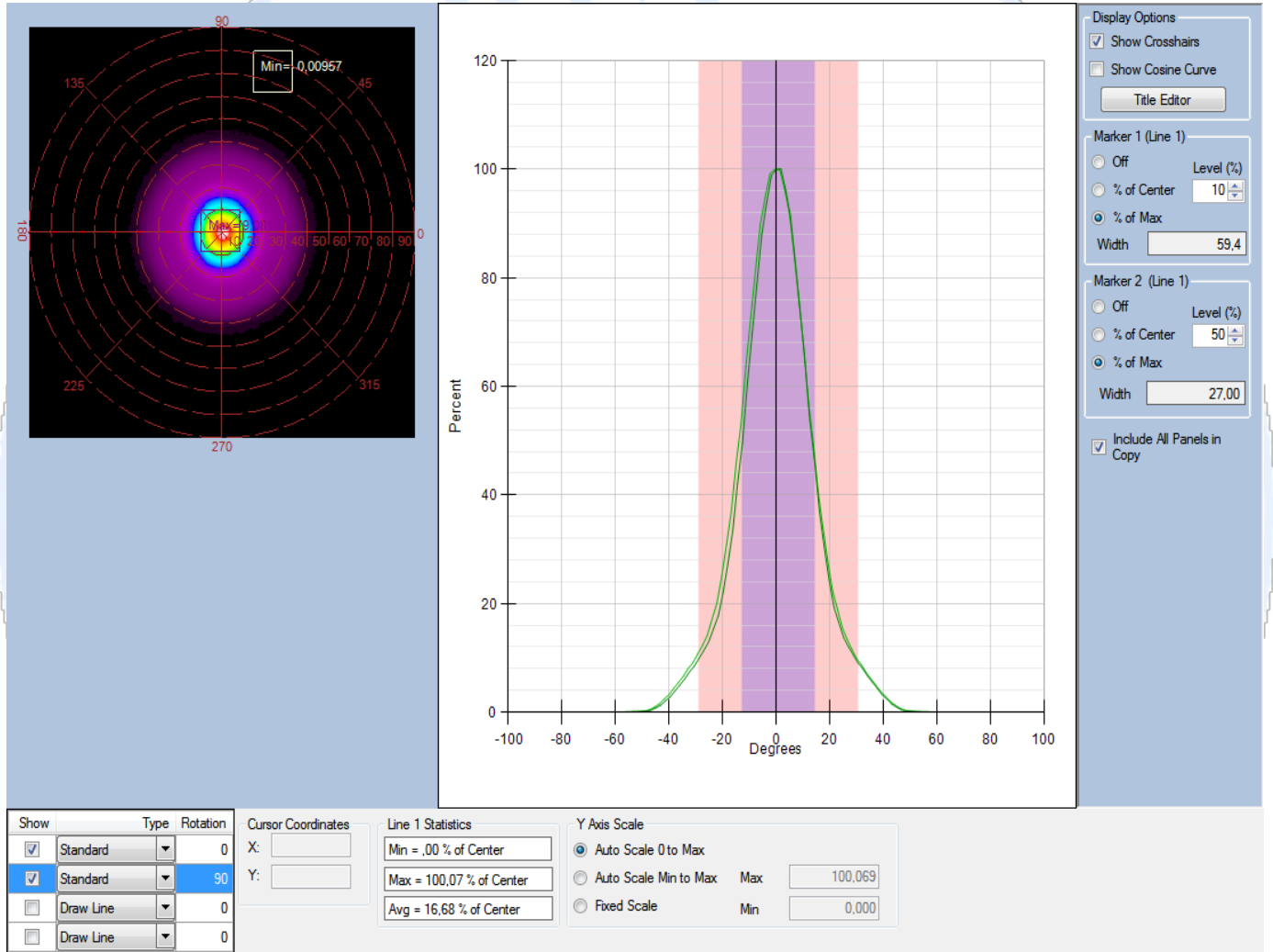




MUAYENE – DENEY SONUÇLARI / TEST RESULTS

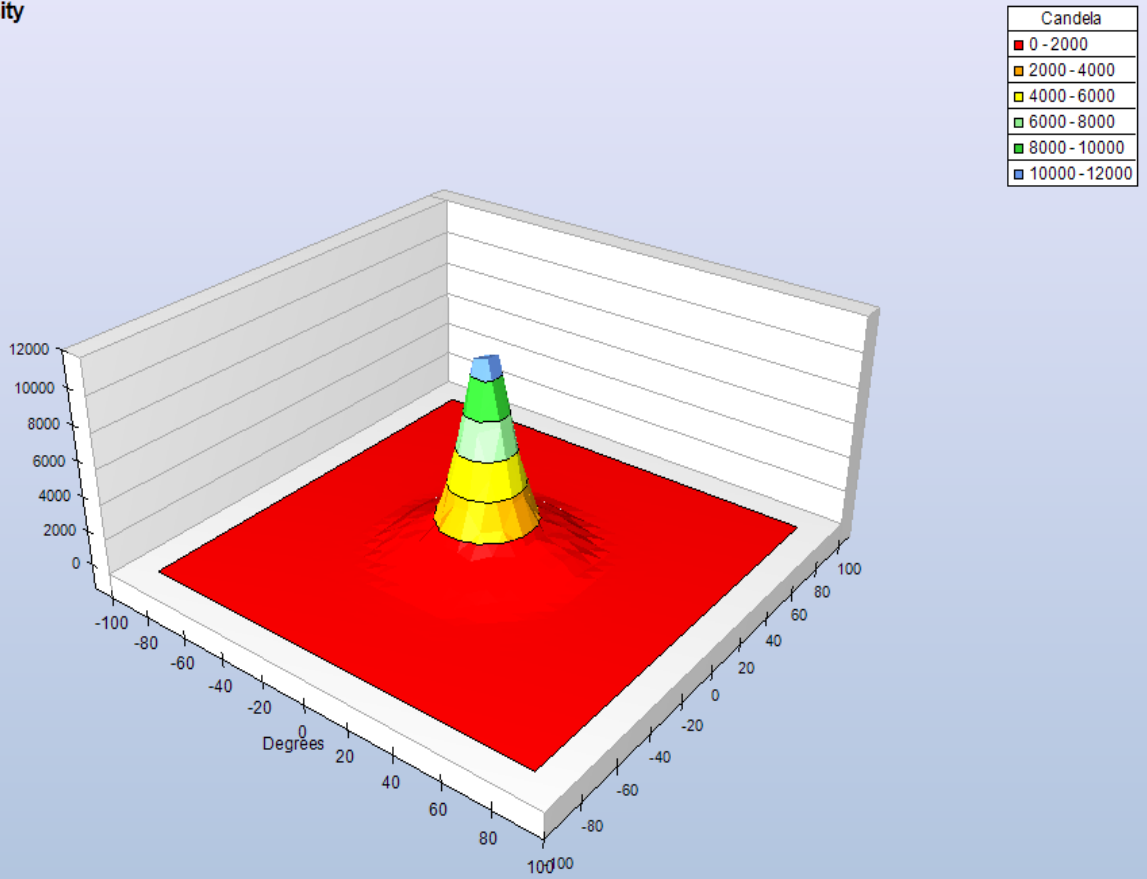


MUAYENE – DENEY SONUÇLARI / TEST RESULTS

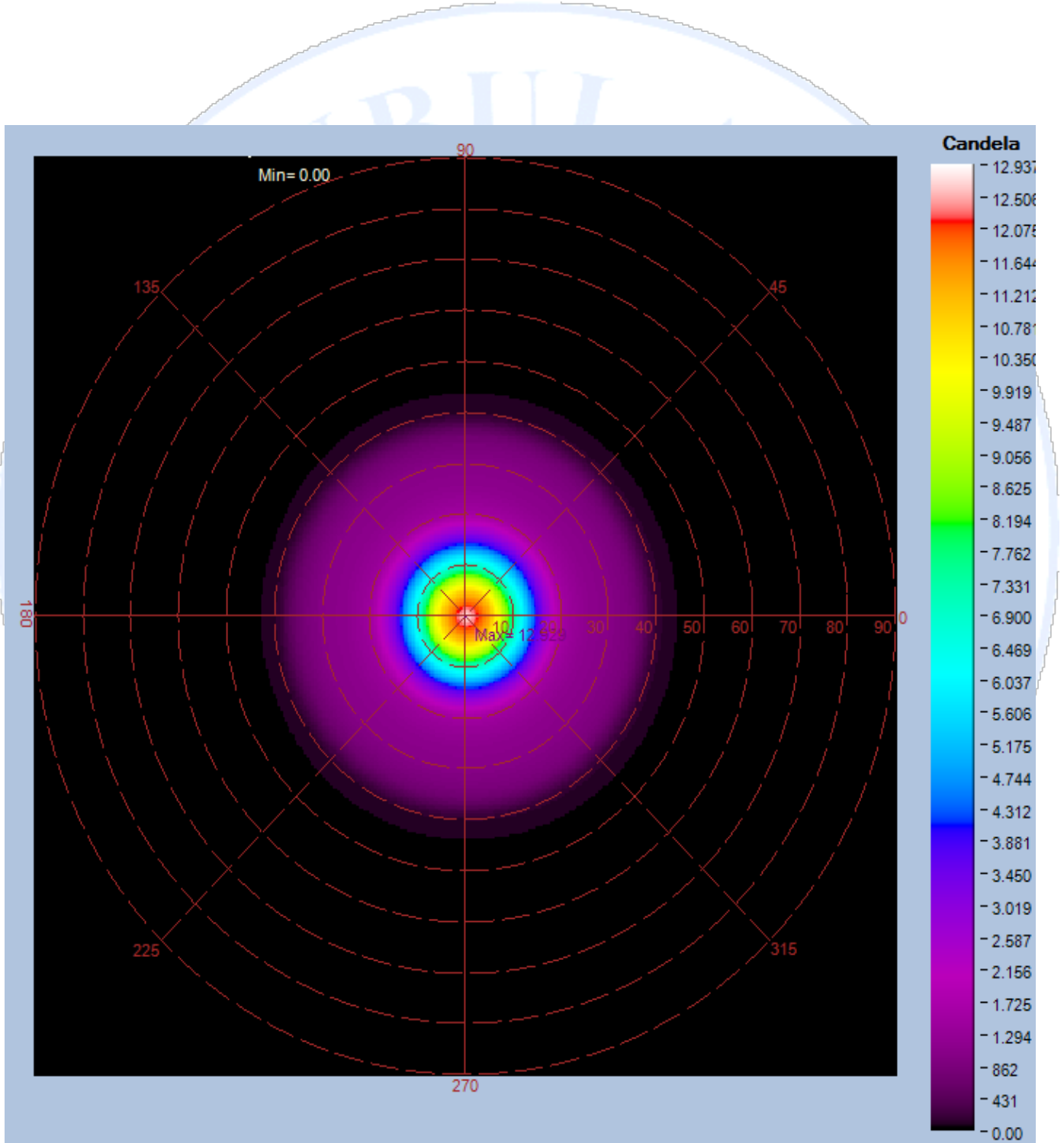


MUAYENE – DENEY SONUÇLARI / TEST RESULTS

Luminous Intensity



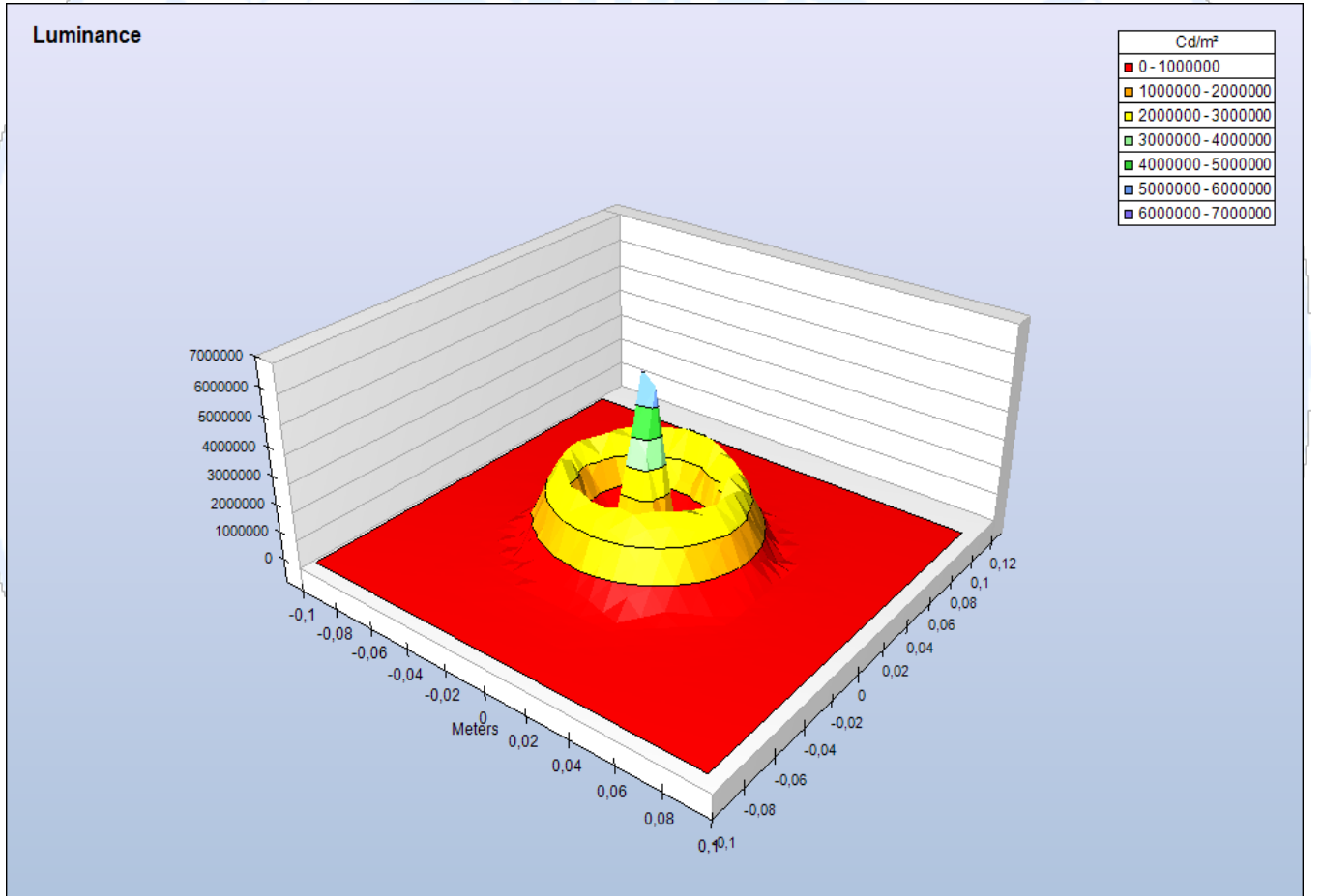
MUAYENE – DENEY SONUÇLARI / TEST RESULTS



İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATOIES)

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

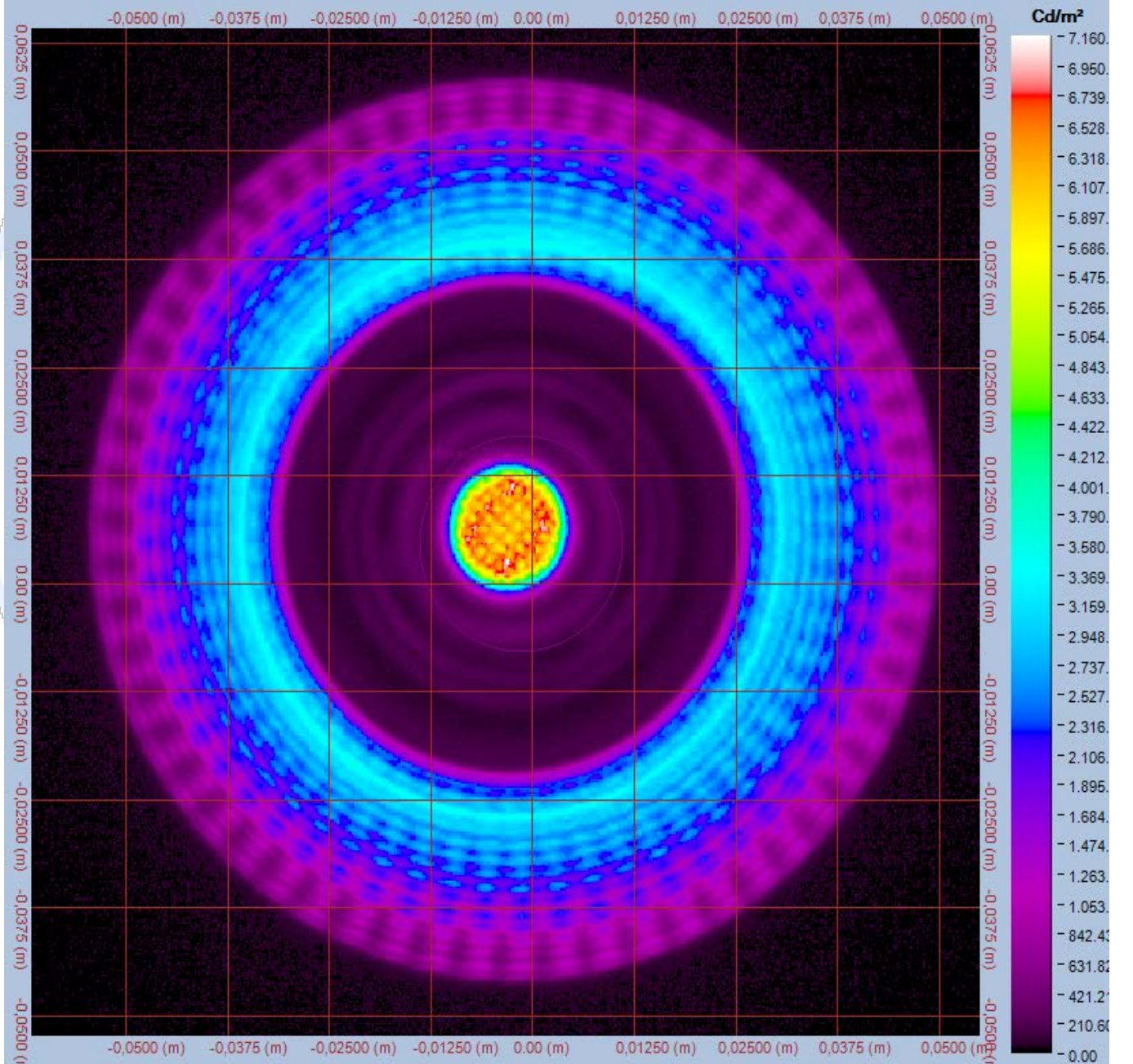




İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

MUAYENE – DENEY SONUÇLARI / TEST RESULTS





**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( ISTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS****FOTOMETRİK ÖLÇÜM SONUÇLARI****PHOTOMETRIC MEASUREMEN RESULTS**

<b>Kullanılan Cihaz/EquipmentUsed.....:</b>	NFMS Goniophotometer LabSphere Sphere System
<b>Uygulanan Standart-Metot/Applied Standard-Method.....:</b>	TS EN13032-1:2004 +A1:2012LightandLighting – Measurementand Presentation of Photometric Data of Lampsand Luminaires-Part1: Measurementand File.
<b>Deney Ortam Şartları/ExperimentalAmbientConditions.....:</b>	25°C ±5°C, 35%RH±5%RH
<b>Armatüre Uygulanan Gerilim / AppliedVoltage.....:</b>	220V
<b>Armatür Markası-Üretici /LuminaireBrand-Producer.....:</b>	ODSEL LEKTRONİK
<b>Armatür Kodu-Modeli / LuminaireCode-Model.....:</b>	6101-130-CB830TNN-015, 6103-130-CB830TNN-015 9101-130-CB830TNN-015, 9102-130-CB830TNN-015 9104-130-CB830TNN-015, 9303-130-CB830TNN-015 9700-130-CB830TNN-015, 9701-130-CB830TNN-015 9707-130-CB830TNN-015
<b>Armatür Lamba Tipi-açıklama/Lamptype-description of Luminaire.....:</b>	LED SPOT

**İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI**

( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS****FOTOMETRİK ÖLÇÜM SONUÇLARI / PHOTOMETRIC MEASUREMENT RESULTS**

Armatürde Ölçülen Toplam Güç/Measured Total Power of Luminaire.....:	28 W
Armatürün Ölçülen Işık Akısı /MeasuredLuminousFlux of Luminaire.....:	2707 lm (Effective Value)
Lamba Katalog Işık Akısı / LampCatalogLuminousFlux.....:	--
Armatür verimliliği (lm/Watt) / Luminousefficacy.....:	96,67 lm/Watt
Armatür Geri Verim (LOR)% / Luminousefficacy %.....:	--

**FOTOMETRİK ÖLÇÜM BELİRSİZLİK TABLOSU / PHOTOMETRIC MEASUREMENT UNCERTAINTY BUDGET**

Deney/Test(Unit)	Ölçüm Belirsizliği/Uncertainty
Radiant Flux (Watt)	1,3%
Luminous flux (Lumen / Lm)	1,08%
Correlated Color Temperature [CCT – Kelvin(K)]	7K
Chromaticity x coord	0,02
Chromaticity y coord	0,02
Chromaticity u' coord	0,02
Chromaticity v' coord	0,02
Color Rendering Index	1,4

**MUAYENE – DENEY SONUÇLARI / TEST RESULTS**

**Numunenin fotoğrafları / Photos of the Test Sample**

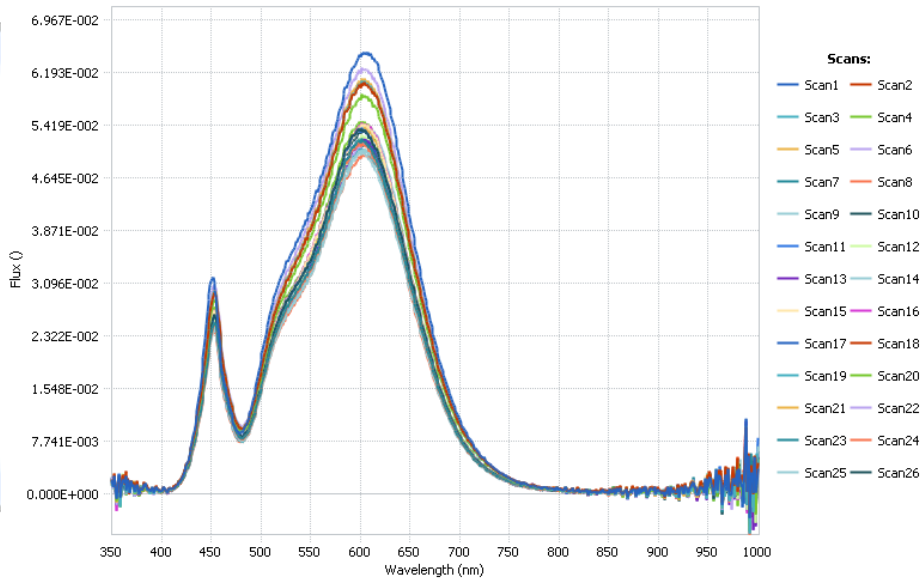


**MUAYENE – DENEY SONUÇLARI / TEST RESULTS****Fotometrik Ölçümler / Photometric measurements**

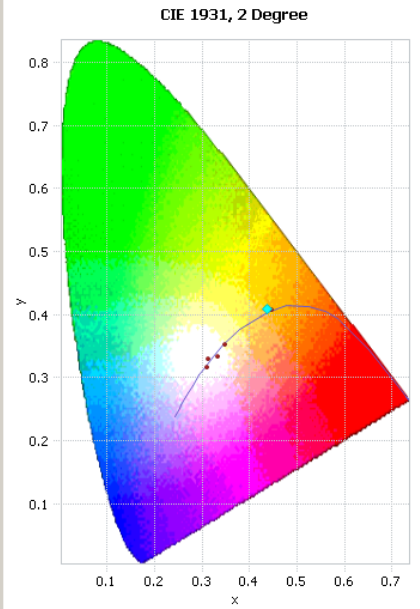
Parameter	Scan 25
Date/Time	11.06.2015 17:03
Radiant Flux (Watts)	8,47
Luminous Flux (lumens)	2707,00
Scotopic Luminous Flux (lm')	3615,00
Chromaticity x coord	0,4373
Chromaticity y coord	0,4095
Chromaticity u coord	0,2484
Chromaticity v coord	0,349
Delta uv	0,0021
Chromaticity u' coord	0,2484
Chromaticity v' coord	0,5236
Peak Wavelength (nm)	603,8
Center Wavelength (nm)	589,8
Centroid Wavelength (nm)	587,6
Dominant Wavelength (nm)	581,9
Full Width Half Max Bandwidth (nm)	137,8
Excitation Purity (%)	54,2
Correlated Color Temperature (deg. K)	3036
Correlation	0,0054
Correlation Coefficient	0,002128129
Color Rendering Index Average (RA)	81,96952597
Color Rendering Index (R1)	79,9
Color Rendering Index (R2)	88,5
Color Rendering Index (R3)	96,3
Color Rendering Index (R4)	80,7
Color Rendering Index (R5)	79,5
Color Rendering Index (R6)	85,4
Color Rendering Index (R7)	84,8
Color Rendering Index (R8)	60,7
Color Rendering Index (R9)	7,7
Color Rendering Index (R10)	73,4
Color Rendering Index (R11)	79,5
Color Rendering Index (R12)	65,5
Color Rendering Index (R13)	81,6
Color Rendering Index (R14)	97,8

MUAYENE – DENEY SONUÇLARI / TEST RESULTS

▼ SPECTRAL FLUX GRAPH:

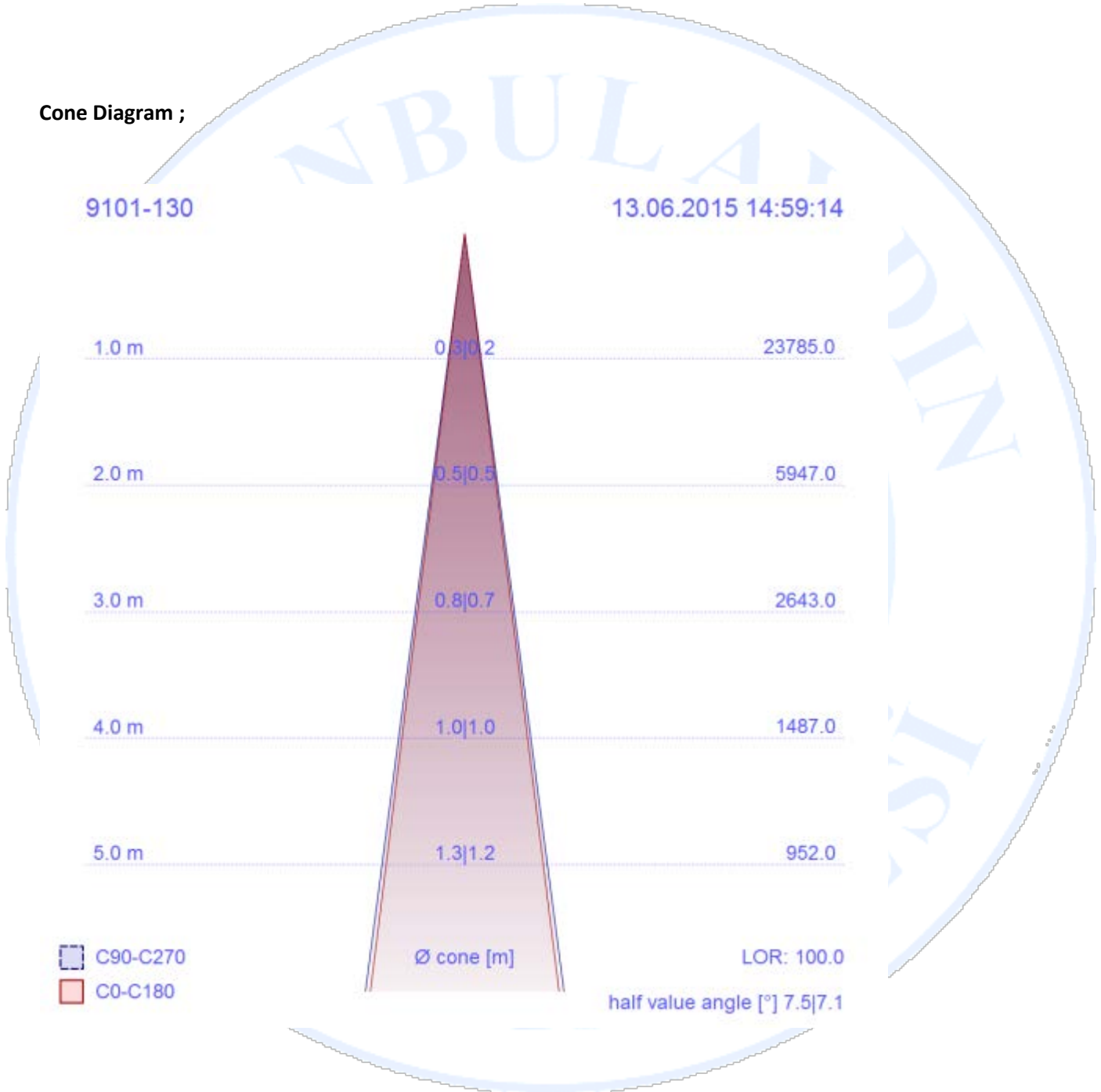


▼ CHROMATICITY DIAGRAM:

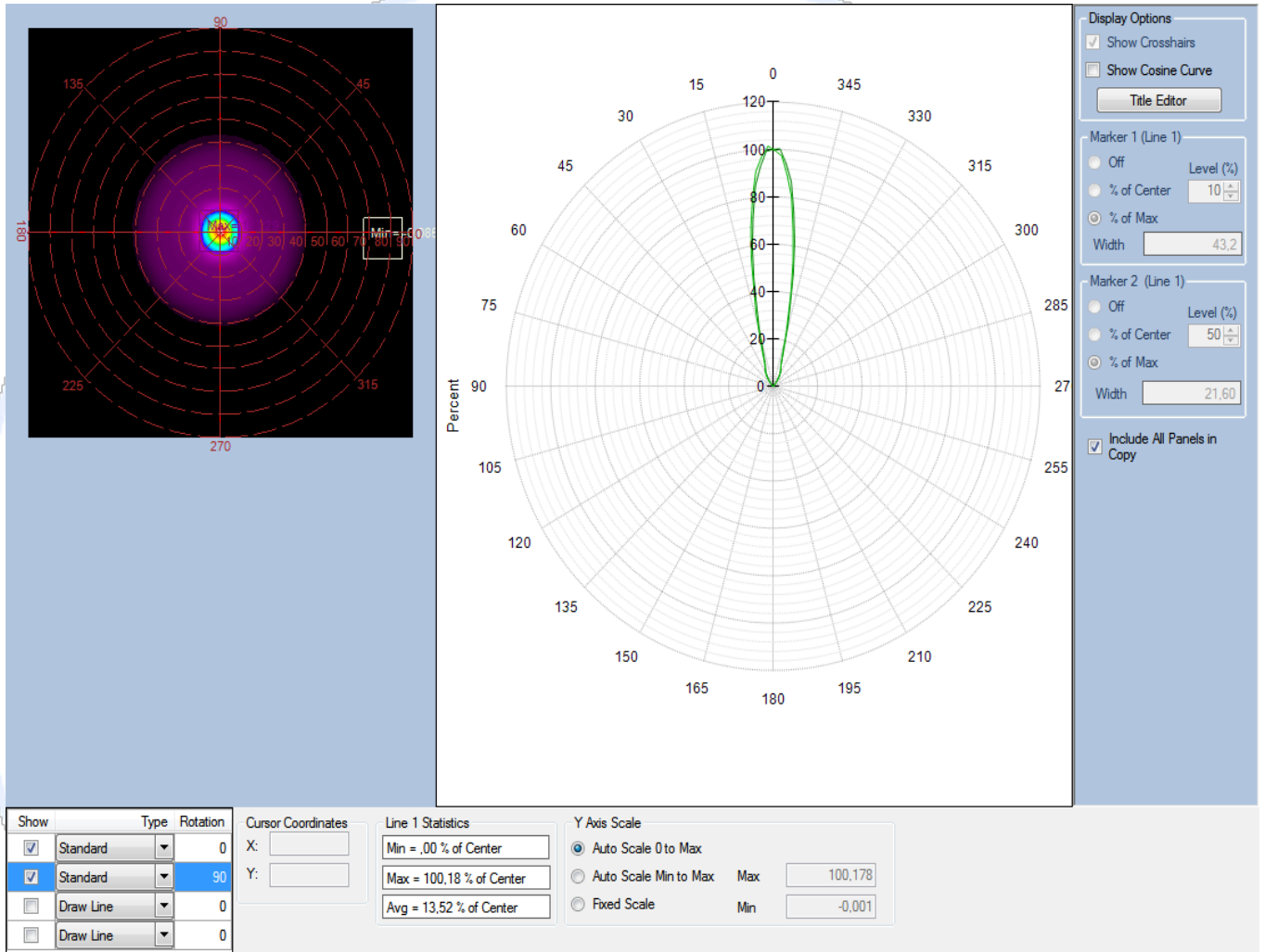


## MUAYENE – DENEY SONUÇLARI / TEST RESULTS

### Cone Diagram ;



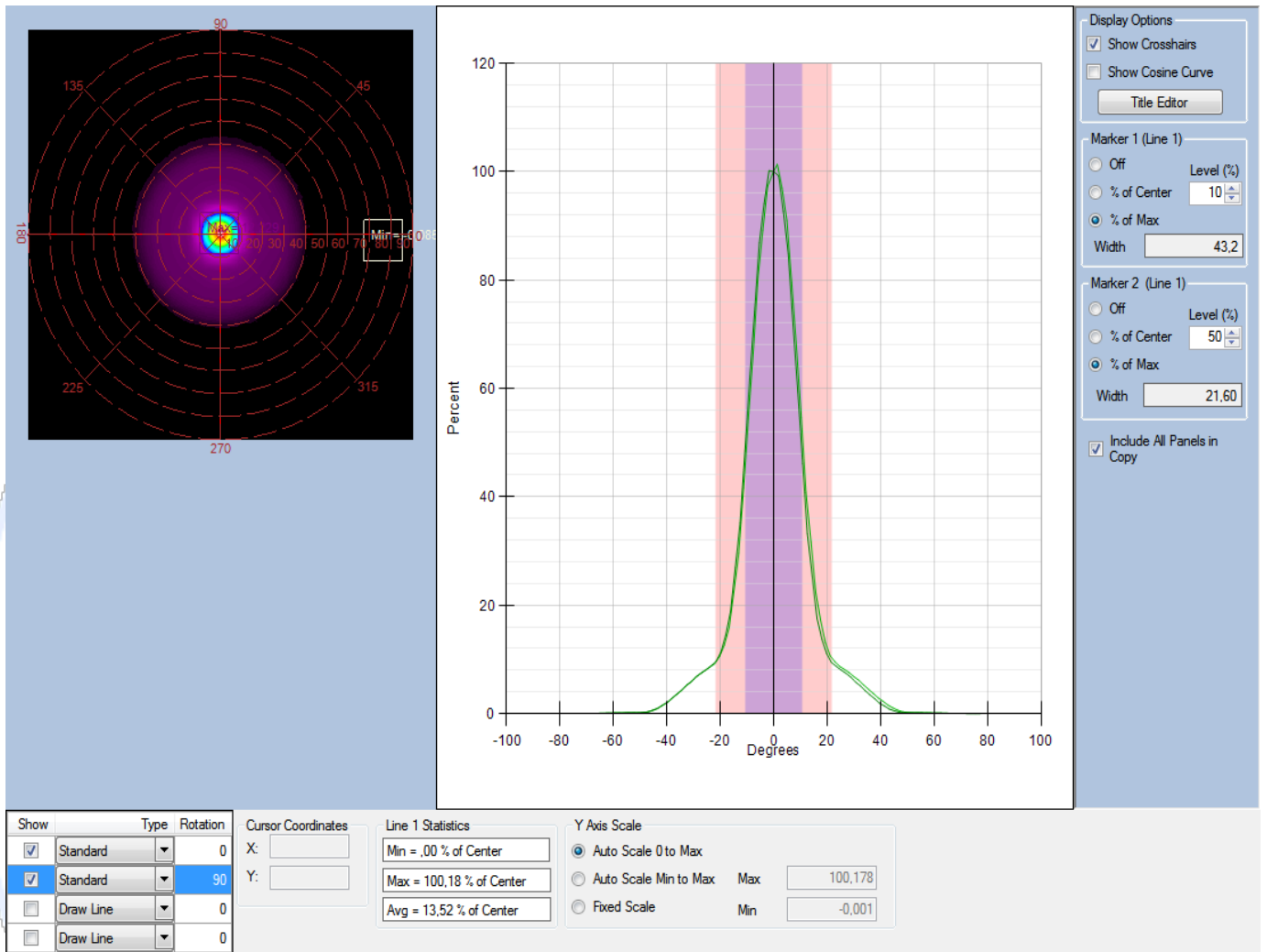




## İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

### MUAYENE – DENEY SONUÇLARI / TEST RESULTS

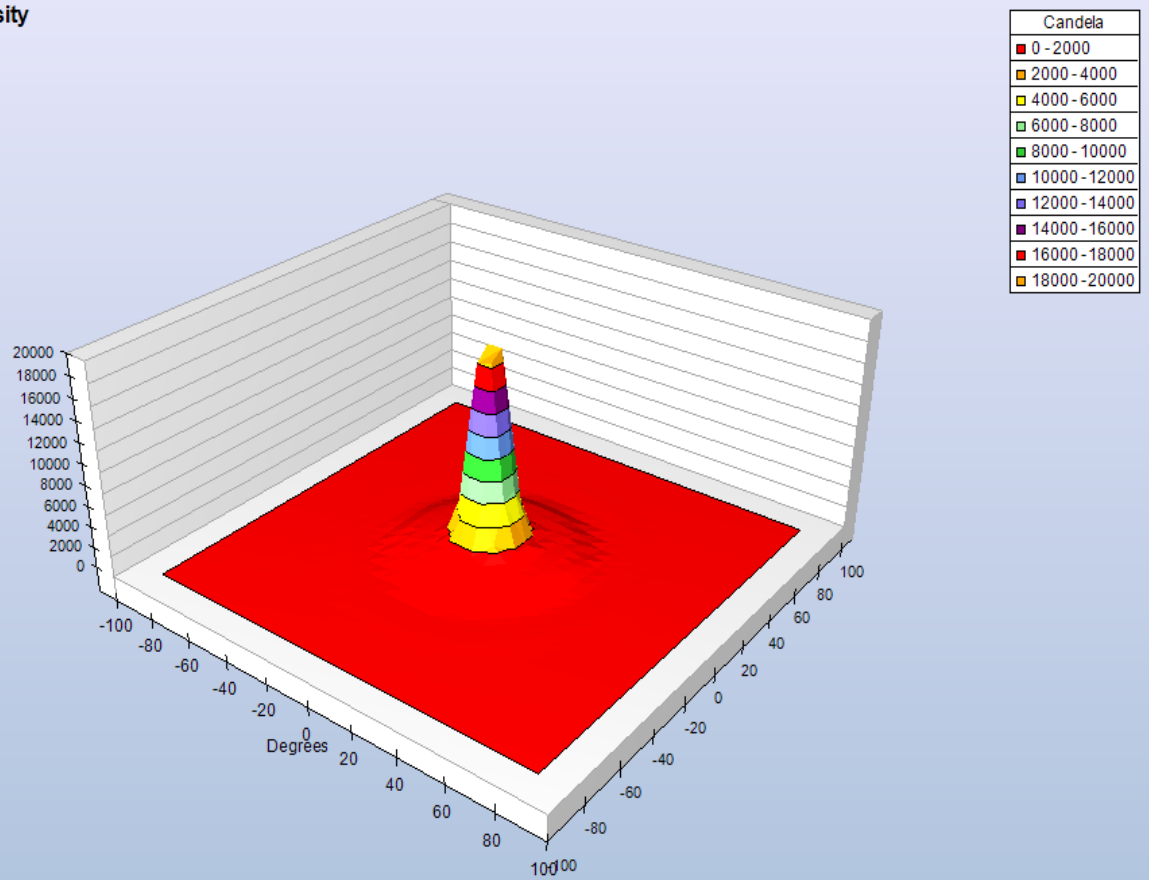


## İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

( İSTANBUL AYDIN UNIVERSITY LIGHTING TEST MEASUREMENT AND ANALYSIS LABORATORIES)

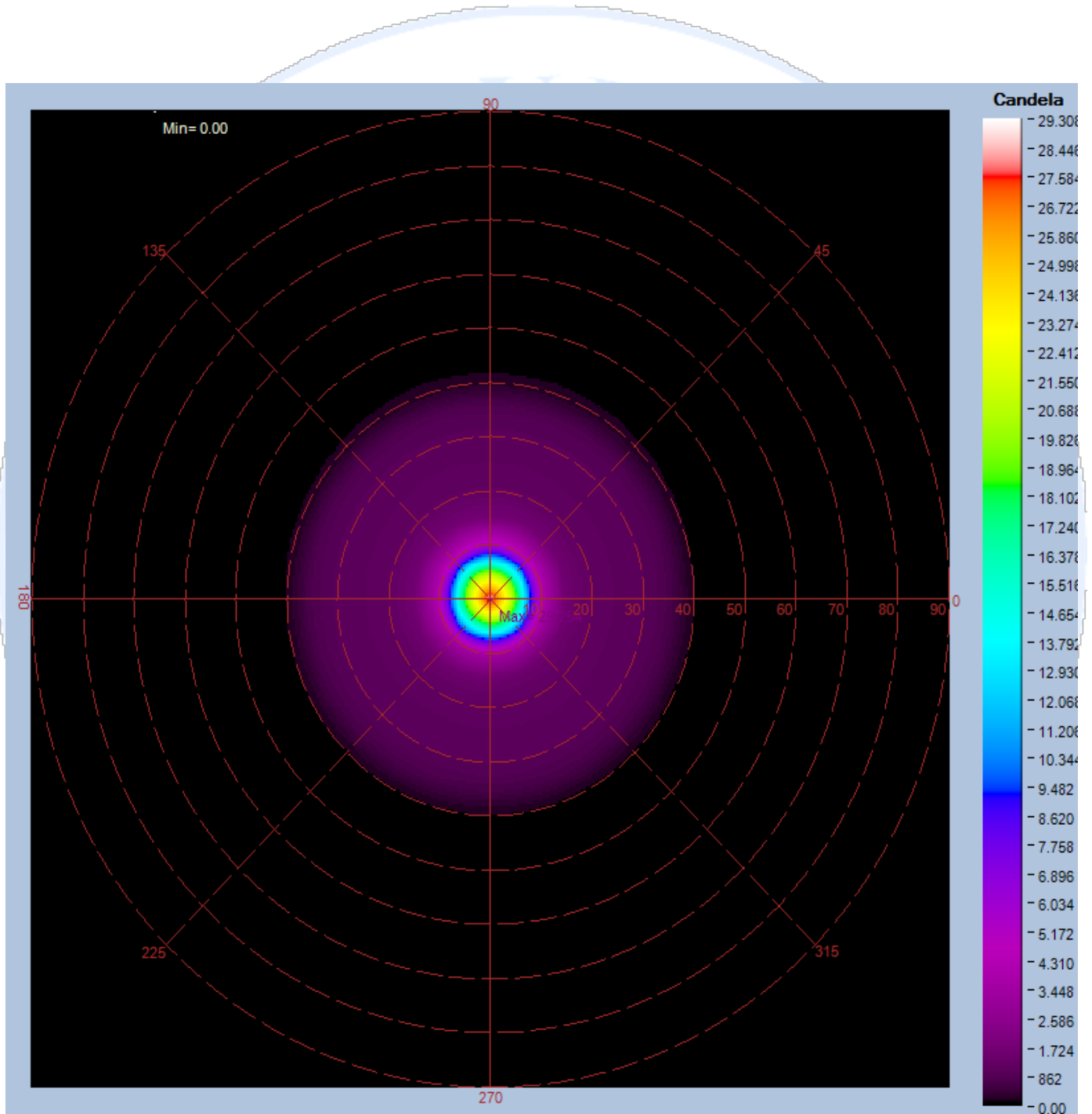
### MUAYENE – DENEY SONUÇLARI / TEST RESULTS

# Luminous Intensity



ÜNİVERSİTESİ  
• 2003 •

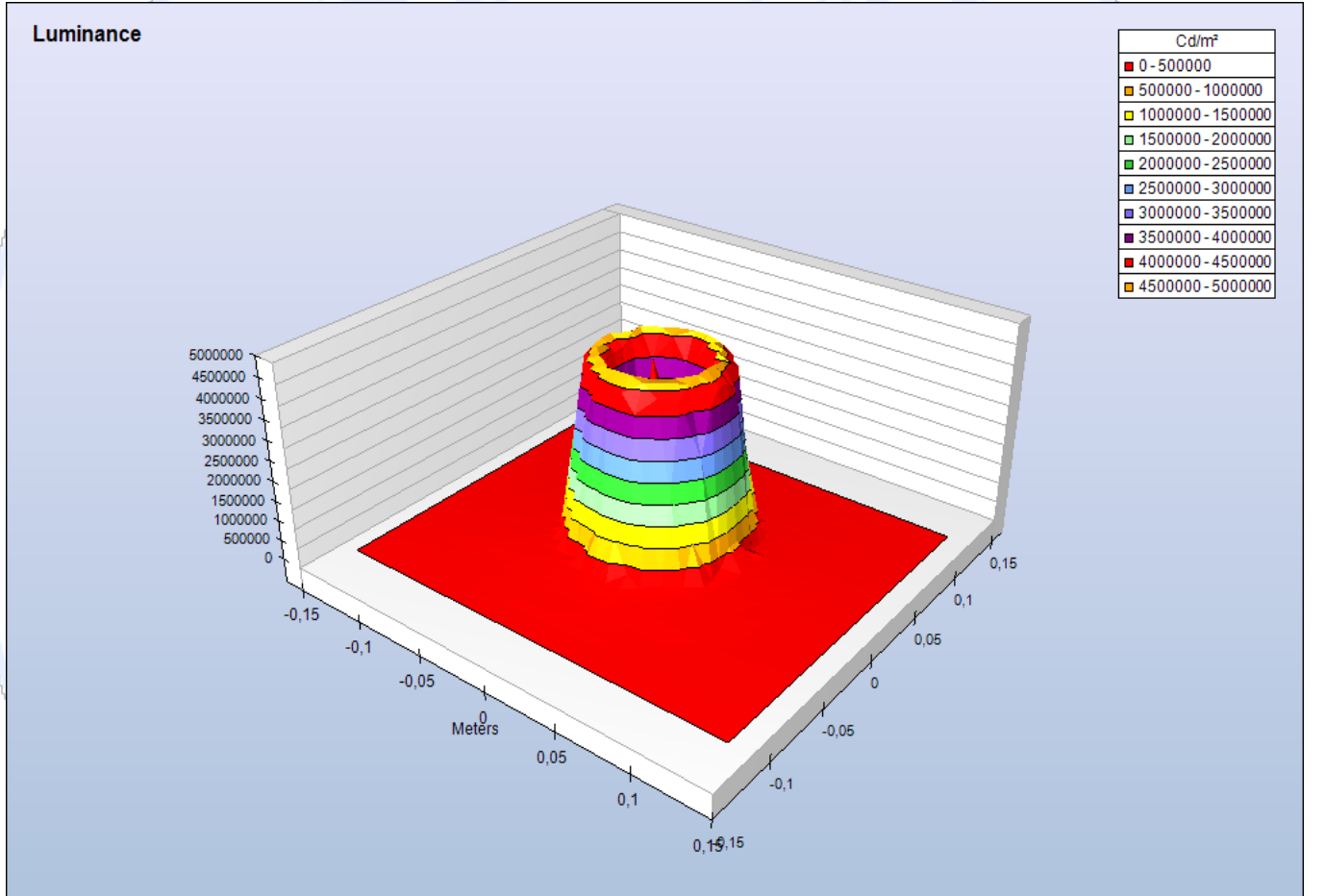
## MUAYENE – DENEY SONUÇLARI / TEST RESULTS



# İSTANBUL AYDIN ÜNİVERSİTESİ AYDINLATMA TEST-ÖLÇÜM ve ANALİZ LABORATUARLARI

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## MUAYENE – DENEY SONUÇLARI / TEST RESULTS



MUAYENE – DENEY SONUÇLARI / TEST RESULTS

