

On **20/11/2022** document No. **TR12200016 [0]** is applied to the following elements:

<b>REFERENCE</b>	<b>DESCRIPTION</b>
<b>214911</b>	COAX.CAB.TR165 LSFH Dca/A 11Rtc GR.250m

# Test Report

## Electrical Characterization

Document No.: **IEI15122002001**

Date: **15-12-2020**

Made to: **Productos OEM**

Reference: **214911**

Device: **COAX.CAB.TR165 LSFH Dca/A 11RtC GR.250m**

Image:



**Product Data**

D.U.T. Id: <b>5773</b>	In Date: <b>21-10-2020</b>	Out Date: <b>15-12-2020</b>
D.U.T.: <b>COAX.CAB.TR165 LSFH Dca/A 11RtC GR.250m</b>		
Trade Mark: <b>Televes</b>	Reference: <b>214911</b>	
	State Development: <b>External M. (Alternative)</b>	

**Standards**

Standard	Title	Part	Section
EN 50117-2-5:2004 + A1:2008 + A2:2013 UNE-EN 50117-2-5:2005	Coaxial cables.	Part 2-5: Sectional specification for cables used in cabled distribution networks. Outdoor drop cables for systems operating at 5MHz - 3000MHz.	

**Standard Paragraphs**

Standard	Paragraph	Title
EN 50117-2-5:2004	5.1.2.6	Transfer impedance. Triaxial method
EN 50117-2-5:2004	5.1.2.7	Screening attenuation. Triaxial method
EN 50117-2-5:2004	5.2.9	Flexure. Procedure A: S bend
EN 50117-2-5:2004	5.2.9	Flexure. Procedure B: helix bend

**Measurements made**

	Result	Measure	Standard Applied	Standard Method	Standard Limit
1	Class A	Transfer Impedance after mechanical tests (5MHz-30MHz) in coaxial cables	EN 50117-2-5:2004 Paragraph: 5.1.2.6	EN 50289-1-6:2002 Paragraph: 6 EN 50289-3-9:2001 Paragraph: 4.3.1 EN 50289-3-9:2001 Paragraph: 8.3.2	EN 50117-2-5:2004 Paragraph: 5.1.2.6
2	Class A	Screening attenuation after mechanical tests (30MHz-2150MHz) in coaxial cables	EN 50117-2-5:2004 Paragraph: 5.1.2.7	EN 50289-3-9:2001 Paragraph: 4.3.1 EN 50289-1-6:2002 Paragraph: 8 EN 50289-3-9:2001 Paragraph: 8.3.2	EN 50117-2-5:2004 Paragraph: 5.1.2.7

Made by:

*Diego Rodriguez*

**Diego Rodriguez Noguero**

Checked By:

*Antonio Pardo Fuentes*

**Antonio Pardo Fuentes**

Approved by:

*Eduardo Castro Ares*

**Eduardo Castro Ares**

Summary	Pag. 2
D.U.T. Description	Pag. 4
1. Transfer Impedance after mechanical tests (5MHz-30MHz) in coaxial cables	Pag. 6
2. Screening attenuation after mechanical tests (30MHz-2150MHz) in coaxial cables	Pag. 9

**D.U.T. Description**

**Administrative Data**

D.U.T. Id: **5773**

In Date: **21-10-2020**

Out Date: **15-12-2020**

**Product Data**

D.U.T.: **COAX.CAB.TR165 LSFH Dca/A 11RtC GR.250m**

Trade Mark: **Televes**

Reference: **214911**

Description: **COAX.CAB.TR165 LSFH Dca/A 11RtC GR.250m**

**Technical Data**

Manufacturer

State Development: **External M. (Alternative)**

Type: **Passive**

No. of Ports: **1**

Chassis: **Cable**

Port	Type	Range	Direction	Connector	Comments
1	Chassis			Enclosure	

**D.U.T. Images**



Name **20201021\_142321**



Name **20201021\_142333**

**D.U.T. Images (Cont.)**



Name **20201021\_142409**

**1. Transfer Impedance after mechanical tests (5MHz-30MHz) in coaxial cables****Measure**Date: **11-12-2020****Applied Procedure**Procedure: **INT-OEM-015**Title: **Transfer Impedance after mechanical tests (5MHz-30MHz) in coaxial cables****Standard | Standard Limit**Standard: **EN 50117-2-5:2004**Paragraph: **5.1.2.6**Title: **Coaxial cables.****Part 2-5: Sectional specification for cables used in cabled distribution networks. Outdoor drop cables for systems operating at 5MHz - 3000MHz.**Paragraph: **Transfer impedance. Triaxial method****Standard Method**Standard: **EN 50289-1-6:2002**Paragraph: **6**Title: **Communication cables. Specifications for test methods.****Part 1-6: Electrical test methods. Electromagnetic performance.**Paragraph: **Transfer Impedance. Triaxial Method****Standard Method**Standard: **EN 50289-3-9:2001**Paragraph: **4.3.1**Title: **Communication cables - Specifications for test methods.****Part 3-9: Mechanical test methods. Bending tests.**Paragraph: **Single bending (helix bend)****Standard Method**Standard: **EN 50289-3-9:2001**Paragraph: **8.3.2**Title: **Communication cables - Specifications for test methods.****Part 3-9: Mechanical test methods. Bending tests.**Paragraph: **Cable bending under tension - dynamic test (S bend)****Environmental Conditions**Temperature: **22.1°C**Humidity: **52.1%**Atmospheric Pressure: **1003mbar**

**Used Equipment**

<b>Id</b>	<b>Equipment</b>	<b>Trade Mark</b>	<b>Model</b>	<b>Serial No.</b>
369	50/75 Matching Pad	Agilent	11852B	55420
158	Cable Agilent 11500B (12.4GHz)	Agilent	11500B	50438
366	Cable Agilent 11500B (12.4GHz)	Agilent	11500B	50440
140	Signal generator R&S (9KHz-3.3GHz)	R&S	SML03 - ref 1090.3000.13	102479
41	Measurement receiver R&S ESPI 3 9KHz-3GHz	R&S	ESPI-ref 1142.8007.03	100044
306	Triaxial system CoMeT	Rosenberger - Bedea	----	----
345	Bending test system	----	----	----



**Measure Data**

Measure No.: **1**      Measure Date: **15-12-2020**      Tube length: **1 m**

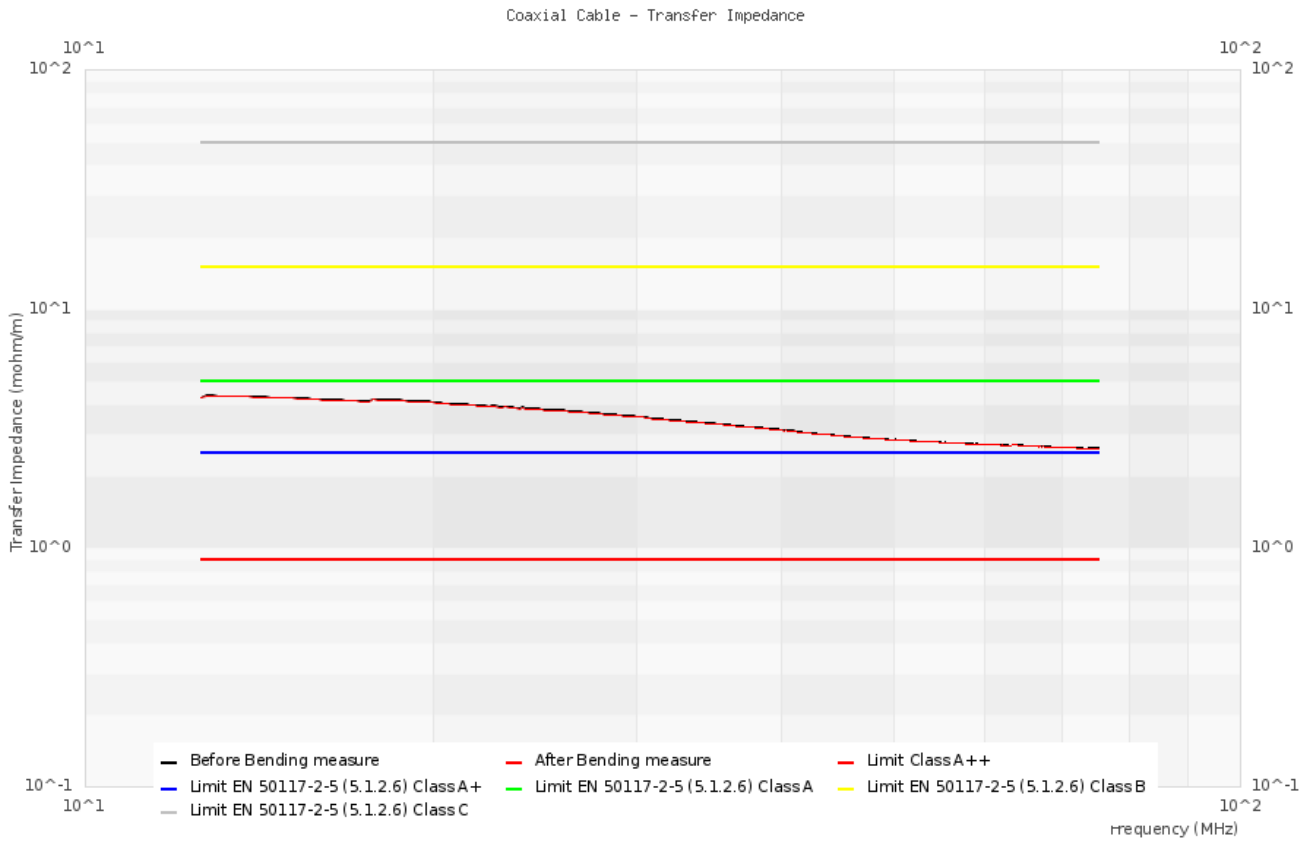
**Simple Bending in Helix**

Cycle No.: **2**      Laps No.: **2**      Mandrel Diameter (cm): **15**  
Preparation of Extremes: **F Connector**      Tension Device: **Bending Test System**      Length of Sample (m): **1.3**

**Dynamic Bending in `S`**

Cycle No.: **1**      Pulley Radius (cm): **7.5**      Distance between Centers (cm): **30**  
Bending Length (cm): **100**      Bending Angle (°): **120**      Displacement Speed: **<1 m/s**  
Preparation of Extremes: **F Connector**      Tension Device: **Bending Test System**      Length of Sample (m): **1.3**  
Maximum Tension (N): **1.5**

**Graph**



Before Bending										
Range	Zt (mohm/m)	F. (MHz)	C. A+ Limit	Class A+	C. A Limit	Class A	C. B Limit	Class B	C. C Limit	Class C
5MHZ - 30MHz	4.39	5	2.5	✘	5	✔	15	✔	50	✔

After Bending										
Range	Zt (mohm/m)	F. (MHz)	C. A+ Limit	Class A+	C. A Limit	Class A	C. B Limit	Class B	C. C Limit	Class C
5MHZ - 30MHz	4.36	5	2.5	✘	5	✔	15	✔	50	✔

**2. Screening attenuation after mechanical tests (30MHz-2150MHz) in coaxial cables****Measure**Date: **10-12-2020****Applied Procedure**Procedure: **INT-OEM-014**Title: **Screening attenuation after mechanical tests (30MHz-2150MHz) in coaxial cables****Standard | Standard Limit**Standard: **EN 50117-2-5:2004**Paragraph: **5.1.2.7**Title: **Coaxial cables.****Part 2-5: Sectional specification for cables used in cabled distribution networks. Outdoor drop cables for systems operating at 5MHz - 3000MHz.**Paragraph: **Screening attenuation. Triaxial method****Standard Method**Standard: **EN 50289-3-9:2001**Paragraph: **4.3.1**Title: **Communication cables - Specifications for test methods.****Part 3-9: Mechanical test methods. Bending tests.**Paragraph: **Single bending (helix bend)****Standard Method**Standard: **EN 50289-1-6:2002**Paragraph: **8**Title: **Communication cables. Specifications for test methods.****Part 1-6: Electrical test methods. Electromagnetic performance.**Paragraph: **Screening attenuation. Triaxial Method****Standard Method**Standard: **EN 50289-3-9:2001**Paragraph: **8.3.2**Title: **Communication cables - Specifications for test methods.****Part 3-9: Mechanical test methods. Bending tests.**Paragraph: **Cable bending under tension - dynamic test (S bend)****Environmental Conditions**Temperature: **22.1°C**Humidity: **52.1%**Atmospheric Pressure: **1003mbar**

**Used Equipment**

Id	Equipment	Trade Mark	Model	Serial No.
369	50/75 Matching Pad	Agilent	11852B	55420
158	Cable Agilent 11500B (12.4GHz)	Agilent	11500B	50438
366	Cable Agilent 11500B (12.4GHz)	Agilent	11500B	50440
140	Signal generator R&S (9KHz-3.3GHz)	R&S	SML03 - ref 1090.3000.13	102479
41	Measurement receiver R&S ESPI 3 9KHz-3GHz	R&S	ESPI-ref 1142.8007.03	100044
306	Triaxial system CoMeT	Rosenberger - Bedea	----	----
345	Bending test system	----	----	----

**Measure Data**

Measure No.: 1

Measure Date: 11-12-2020

Tube length: 2 m

**Simple Bending in Helix**

Cycle No.: 2

Laps No.: 4

Mandrel Diameter (cm): 15

Preparation of Extremes: F Connector

Tension Device: Bending Test System

Length of Sample (m): 2.3

**Dynamic Bending in `S`**

Cycle No.: 1

Pulley Radius (cm): 7.5

Distance between Centers (cm): 30

Bending Length (cm): 100

Bending Angle (°): 120

Displacement Speed: <1 m/s

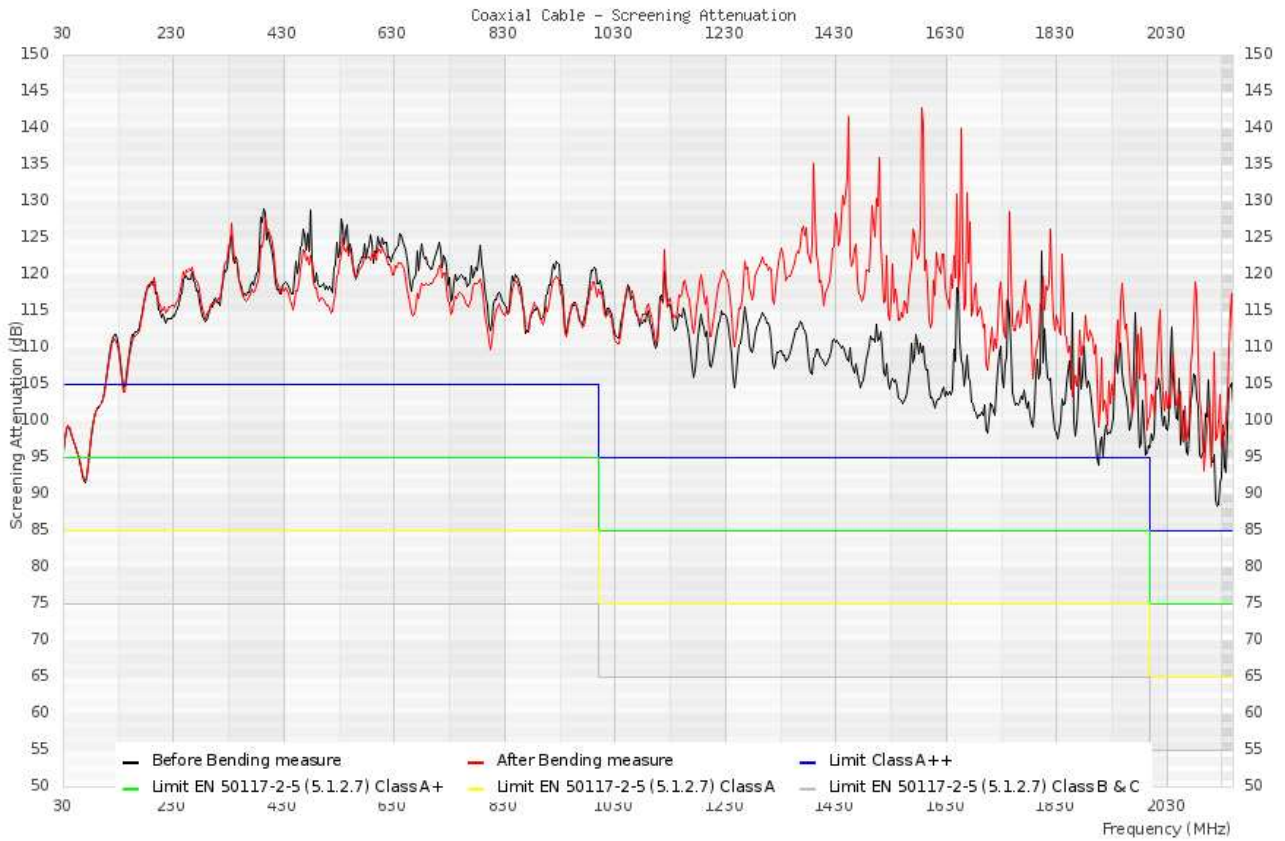
Preparation of Extremes: F Connector

Tension Device: Bending Test System

Length of Sample (m): 2.3

Maximum Tension (N): 1.5

**Graph**



Before Bending								
Range	Screening Attenuation (dB)	Frequency (MHz)	C. A+ Limit	Class A+	C. A Limit	Class A	C. B & C Limit	Class B & C
30MHz - 1GHz	91.56	70	95	✘	85	✔	75	✔
1GHz - 2GHz	93.97	1906	85	✔	75	✔	65	✔
2GHz - 2.15GHz	88.30	2121	75	✔	65	✔	55	✔

After Bending								
Range	Screening Attenuation (dB)	Frequency (MHz)	C. A+ Limit	Class A+	C. A Limit	Class A	C. B & C Limit	Class B & C
30MHz - 1GHz	91.74	70	95	✘	85	✔	75	✔
1GHz - 2GHz	98.82	1994	85	✔	75	✔	65	✔
2GHz - 2.15GHz	93.28	2097	75	✔	65	✔	55	✔