

MCX Series Coaxial Connectors – Tyco Greenpar

DESIGN OBJECTIVE

The product described herein has been partially tested to ensure compliance to the requirements outlined below. The Tyco Greenpar MCX connector series is manufactured in accordance with the CECC 22 220 specification using materials that optimise RF Coax connector performance. Tyco Electronics makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, Tyco Electronics may change these requirements based on the results of additional testing and evaluation. Contact Tyco Electronics Engineering for further details.

1.0 Scope

1.1 Introduction

This specification covers performance, test and quality requirements for the Tyco Electronics Greenpar MCX Series coax cable and PCB connectors. All dimensions, materials and plating not mentioned in this specification are required to meet the CECC Spec 22 220. This connector series is designed to mate with all other MCX connector styles and genders that meet the CECC 22 220 specification for MCX.

1.2 Qualification

When tests are performed on the subject product, procedures specified in this product specification shall be used. All inspections shall be performed using the applicable inspection plan and product drawings.

1.3 Applicable Documents

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest addition of the document applies. In the event of conflict between requirements in this specification and product drawings, this specification shall take precedence. In the event of conflict between requirements in this specification and referenced documents, this specification shall take precedence.

1.4 Tyco Electronics Documents

Drawings: 1337579, 1337580, 1337581, 1337582, 1337583, 1337584, 1337585,
1337586, 1337587, 1337588, 1478003, 1478004, 1478005, 1478006.
Laboratory Report(s): Tyco Electronics AMP S.p.A. Italia File No. 04/MCX
Qualification Test Report(s): 501-3000 Cable Retention
501-3001 Current Handling

1.5 Requirements

Design & Construction:

Product construction and physical dimensions must meet the applicable product drawing.

Materials & Finish

- *Centre conductor – female spring contact*
Material: Beryllium Copper (CuBe)
Plating: Au as specified in the appropriate drawing.
- *Centre conductor – Male contact*
Material: Copper Alloy (Brass)
Plating: Au as specified in the appropriate drawing.
- *Dielectric*
Material: Polytetrafluoroethylene (PTFE)
Colour: Natural (White)
- *Outer Body Conductor*
Material: Copper Alloy (Brass)
Plating: Au or Ni as specified in the appropriate drawing
- *Action Pin™ Press-Fit Contacts*
Material: Copper Alloy (Phosphor Bronze)
Plating: Lead Free Tin over Nickel

1.6 Electrical Specifications

Characteristic Impedance: $Z = 50$ Ohms
 Frequency Range: DC - 6 GHz
 Return Loss (Reflection): $VSWR \leq 1.05 + 0.05$
 Insertion Loss / Attenuation: $\alpha \leq 0.03 \cdot \sqrt{F(\text{GHz})}$ dB

1.7 Contact Resistance & Outer Conductor Continuity

Max. Test Voltage: 50m Volts

Inner Contact Value

Initial: $\leq 5.0\text{m}\Omega$
 After Conditioning: $\leq 15.0\text{m}\Omega$

Outer Contact Value

Initial: $\leq 2.5\text{m}\Omega$
 After Conditioning: $\leq 7.5\text{m}\Omega$

Insulation Resistance

Test voltage: 500 Volts
 Initial: $\geq 1\text{G}\Omega$
 After Conditioning: $\geq 500\text{M}\Omega$

Current Handling

1 Amperes @ 165 Deg C
 3 Amperes @ 85 Deg C

Dielectric Withstanding Voltage

1000 V @ 50 Hz

Voltage Rating

335 Volts Max @ Sea Level

RF Leakage

≥ 70 dB

1.8 Mechanical Specification

Mating Characteristics

According to CECC 22 220, paragraph 2.2

Contact Captivation

Axial Force: Min. 10N
 Rotational: Min. 0.02Nm

Engagement & Separation

Engagement Force: 63N max.
 Separation Force: 8N min – 20N max.

Mechanical Durability

Maximum 12 matings per minute.
 Value: Min. 500 Operations

Cable Retention Force

Flexible: Minimum 32N for RG178 or equivalent
 Flexible: Minimum 53N for RG174 or equivalent

1.9 Environmental Specifications

Temperature Range: -65 Deg C to +165 Deg C

Vibration

Acceleration: 98m/s² (10g)

Frequency Range: 10Hz – 500Hz

Amplitude: 0.75mm

Total Duration: 6 Hours

Contact Interruption: Max. 1μs

2.0 Climatic Sequence

Test Method according to CECC 22 220, paragraph 4.6.5

Climatic Category: 40/85/21

End