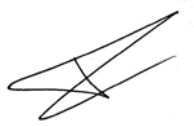
RADIALL
DETAIL SPECIFICATION
FOR
SEMI-RIGID
COAXIAL CABLE

Rédigé par / Written by	**Responsabilité / Responsibility**	**Date**	**Signature**
S. POIZAT	Space Project Manager	17/01/2017	
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DOCUMENTATION CHANGE NOTICE

REVISION OR ISSUE	DATE	CHANGE
1	28/05/03	Creation- Replacement of specification R294-CABL Issue 1
1A	03/05/04	Characteristics of low loss cable updated. Reference to M17/133-00002 for .085 cable deleted.
1B	06/08/10	Updated with corrections of the technical performances of the cable + add the Microcoax references.
1C	19/08/2015	Updated to change the bending radius for SR .085”LL and .141”LL
1D	17/01/2017	Updated to add new cable: Sr.141” RG402 from HaverHill

TABLE OF CONTENTS

1. SCOPE

This specification is a detail specification for cables used in semi-rigid cable assemblies. It shall be read in conjunction with RADIALL generic specification RAD-GEN-CSRS-001 concerning semi-rigid cable assemblies.

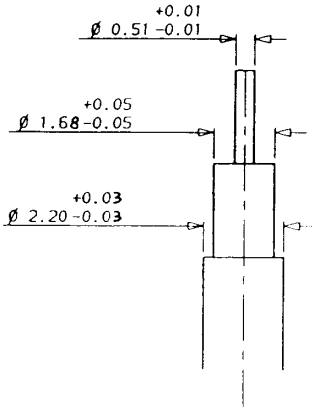
This technical specification describes all the electrical and mechanical parameters of coaxial cables used for the manufacturing of semi-rigid coaxial cable assemblies for SPACE market.

These cables are specific and cannot be sold separately, they are considered as part of coaxial cable assemblies. They are qualified according to MIL DTL 17 and supplied by qualified manufacturers. Purchasing conditions and incoming inspection tests are described in the Radiall document RAD-APP-CABL-001.

2. CABLE CHARACTERISTICS

2.1. Semi-rigid cable .085 (Radiall P/N: C291 851 601 – UT85 C M17 – MICRO COAX)

2.1.1. *Dimensions and Materials*



Parts	Material	Plating
Outer Conductor	Copper	-
Dielectric	PTFE	-
Centre Conductor	Copper	**Silver 2µ mini**

2.1.2. *Electrical Characteristics*

Characteristics	Values	Units
Characteristic Impedance	50 ± 1,5	Ohm
Capacitance	105	pF/m
Dielectric Withstanding Voltage	5000	VRMS at 60Hz
Corona Extinction Voltage	1500	VRMS at 60Hz
Frequency Range	DC – 20	GHz
Maximum Insertion Loss 0,5 GHz 1 GHz 5 GHz 10 GHz 20 GHz	 0,49 0,72 1,64 2,62 4.27	dB/m
Maximum Structural VSWR 500 MHz 5 GHz 20 GHz	 1,08 1,15 1,43	-
Power Handling at 20°C, sea level 0,5 GHz 1 GHz 5 GHz 10 GHz 20 GHz	 180 130 54 35 20	Watts

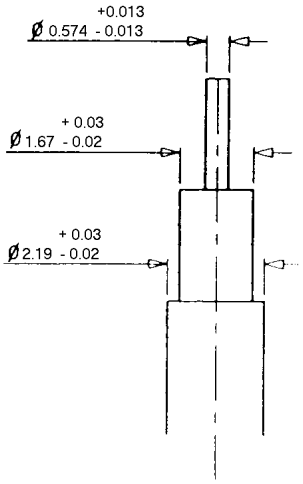
2.1.3. *Mechanical and Environmental Characteristics*

Characteristics		Units
Maximum Mass	22.6	g/m
Minimum Inside Bend Radius	1.27*	mm
Operating Temperature Range	-40 ;+125	°C
Storage Temperature Range	-40 ;+125	°C

* For Radiall production, the nominal Bend Radius used is 7mm

2.2. Semi-rigid .085 micro-porous (Radiall P/N: C291 852 661 – UT85 C LL – MICRO-COAX)

2.2.1. *Dimensions and Materials*



Parts	Material	Plating
Outer Conductor	Copper	-
Dielectric	Micro-porous PTFE	-
Centre Conductor	Copper	**Silver 2µ mini**

2.2.2. *Electrical Characteristics*

Characteristics	Values	Units
Characteristic Impedance	50 ± 1,5	Ohm
Capacitance	87,3	pF/m
Dielectric Withstanding Voltage	2500	VRMS at 60Hz
Corona Extinction Voltage	1500	VRMS at 60Hz
Frequency Range	DC – 64	GHz
Maximum Insertion Loss 0,5 GHz 1 GHz 5 GHz 10 GHz 20 GHz	 0,41 0,58 1.32 1,88 2,71	dB/m
Power Handling at 25°C, sea level 0,5 GHz 1 GHz 5 GHz 10 GHz 20 GHz	 340 239 105 73 50	Watts

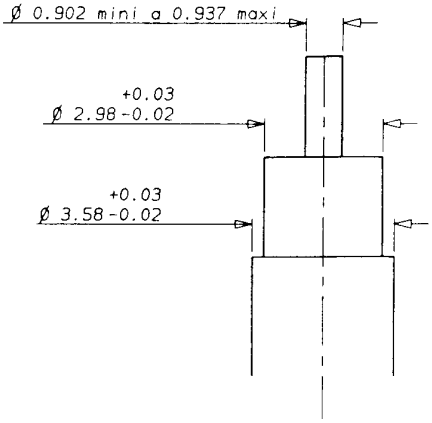
2.2.3. *Mechanical and Environmental Characteristics*

Characteristics		Units
Maximum Mass	20.7	g/m
Minimum Inside Bend Radius	6,35*	mm
Operating Temperature Range	-40 ;+250	°C
Storage Temperature Range	-40 ;+250	°C

* For Radiall production, the nominal Bend Radius used is 8mm

2.3. Semi-rigid cable .141 (Radiall P/N: C291 861 661 – UT141 HA M17 – MICRO-COAX)

2.3.1. *Dimensions and Materials*



Parts	Material	Plating
Outer Conductor	Copper	-
Dielectric	PTFE	-
Centre Conductor	Copper	**Silver 2µ mini**

2.3.2. *Electrical Characteristics*

Characteristics	Values	Units
Characteristic Impedance	50 ± 1,0	Ohm
Capacitance	98,1	pF/m
Dielectric Withstanding Voltage	5000	VRMS at 60Hz
Corona Extinction Voltage	1900	VRMS at 60Hz
Frequency Range	DC – 20	GHz
Maximum Insertion Loss 500 MHz 1 GHz 5 GHz 10 GHz 20 GHz	 0,26 0,39 0,95 1,48 2,30	dB/m
Maximum Structural VSWR 500 MHz 5 GHz 18 GHz	 1,07 1,15 1,21	-
Power Handling at 25°C, sea level 500 MHz 1 GHz 5 GHz 10 GHz 20 GHz	 600 450 180 120 70	Watts

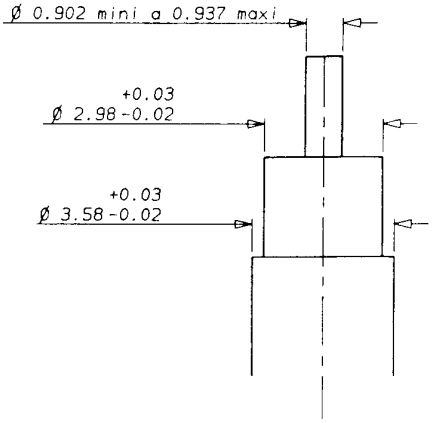
2.3.3. *Mechanical and Environmental Characteristics*

Characteristics		Units
Maximum Mass	51.2	g/m
Minimum Inside Bend Radius	6.35*	mm
Operating Temperature Range	-40 ;+125	°C
Storage Temperature Range	-40 ;+125	°C

* For Radiall production, the nominal Bend Radius used is 11.8mm

2.4. Semi-rigid cable .141 (Radiall P/N: C291 860 601 –M17/130-RG402 – HAVERHILL)

2.4.1. *Dimensions and Materials*



Parts	Material	Plating
Outer Conductor	Copper	-
Dielectric	PTFE	-
Centre Conductor	Copper	**Silver 2µ mini**

2.4.2. *Electrical Characteristics*

Characteristics	Values	Units
Characteristic Impedance	50 ± 1,0	Ohm
Capacitance	98,1	pF/m
Dielectric Withstanding Voltage	5000	VRMS at 60Hz
Corona Extinction Voltage	1900	VRMS at 60Hz
Frequency Range	DC – 20	GHz
Maximum Insertion Loss 500 MHz 1 GHz 5 GHz 10 GHz 20 GHz	 0,26 0,39 0,95 1,48 2,30	dB/m
Maximum Structural VSWR 500 MHz 5 GHz 18 GHz	 1,07 1,15 1,21	-
Power Handling at 25°C, sea level 500 MHz 1 GHz 5 GHz 10 GHz 20 GHz	 600 450 180 120 70	Watts

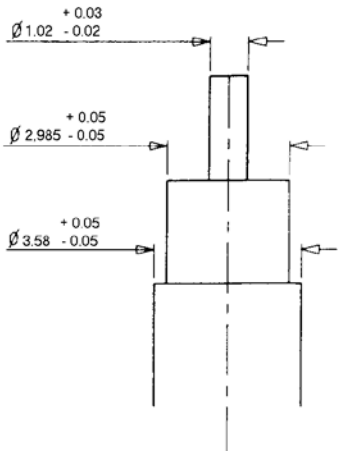
2.4.3. *Mechanical and Environmental Characteristics*

Characteristics		Units
Maximum Mass	51.2	g/m
Minimum Inside Bend Radius	6.35*	mm
Operating Temperature Range	-40 ;+125	°C
Storage Temperature Range	-40 ;+125	°C

* For Radiall production, the nominal Bend Radius used is 11.8mm

2.5. Semi-rigid .141 micro-porous (Radiall P/N: C291 859 661 – UT141C LL – MICRO-COAX)

2.5.1. *Dimensions and Materials*



Parts	Material	Plating
Outer Conductor	Copper	-
Dielectric	Micro-porous PTFE	-
Centre Conductor	Copper	**Silver 2µ mini**

2.5.2. *Electrial Characteristics*

Characteristics	Values	Units
Characteristic Impedance	50 ± 1,5	Ohm
Capacitance	87,3	pF/m
Dielectric Withstanding Voltage	5000	VRMS at 60Hz
Corona Extinction Voltage	1900	VRMS at 60Hz
Frequency Range	DC – 36 GHz	GHz
Maximum Insertion Loss 0,5 GHz 1 GHz 5 GHz 10 GHz 20 GHz	 0,23 0,33 0,75 1,09 1,59	dB/m
Power Handling at 25°C, sea level 0,5 GHz 1 GHz 5 GHz 10 GHz 20 GHz	 821 576 249 172 117	Watts

2.5.3. *Mechanical and Environmental Characteristics*

Characteristics		Units
Maximum Mass	47.6	g/m
Minimum Inside Bend Radius	12,7*	mm
Operating Temperature Range	-40 ;+250	°C
Storage Temperature Range	-40 ;+250	°C

* For Radiall production, the nominal Bend Radius used is 14.5mm