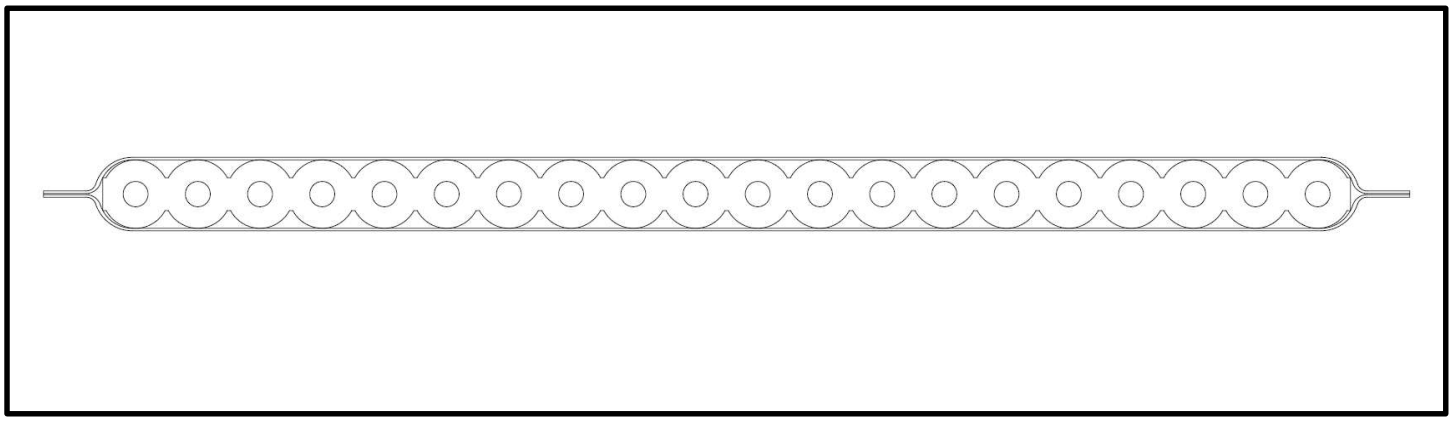
3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series



Scope

This document summarizes test methods, test conditions, and product performance requirements for 3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series.

Reference Documents

Note: Unless otherwise specified, latest edition of the reference documents applies. In the event of conflict between requirements of the references and 3M specification, 3M specification shall take precedence.

3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series	
Literature Code / Document Number	**Document Title**
78-5100-2667-9	Customer Drawing, Round Conductor Flat, Controlled Impedance Cable, 7700 Series, .025" Cable
78-9102-5431-3	Cable Preparation Instructions for Round Conductor Flat, Controlled Impedance Cable, 7700 Series
EIA-364	Commercial standards, specifications and report

Regulatory Compliance

Visit www.3M.com/regs for compliance information. See customer drawings for regulatory specifics on each connector.

Performance Testing

Unless otherwise specified, all tests performed using 3M cable 7700/20 at conditions per EIA-364. Unless otherwise specified, all values and limits are typical of those obtained by qualification testing of the subject product. All specifications are subject to revision and change without notice from 3M.

The surface of the ribbon cable has a metallic appearance but is not conductive. There is a translucent polyester outer layer over an aluminum foil layer, which gives this appearance. The cable construction has a thin conductive layer at each edge, user should evaluate its use in their application and, if necessary, insulating tape may be applied to cover the aluminum layer, as user deems appropriate.

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Materials

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series	
Feature	**Material**
Conductors	30 AWG Solid, Tin Plated Copper
Insulation	Polyolefin
Covering	Aluminum & Polyester

Ratings

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series	
Feature	**Value**
Flame test rating	FT2, Horizontal flame
Voltage rating	30 V AC
Operating temperature	80°C MAX
Storage temperature	-20°C to +80°C

Electrical

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series				
Description or Parameter	**Units**	**Values / Limits**	**Requirement or Conditions**	**Test Standard or Method**
Dielectric withstanding voltage	V DC	750	Subject a voltage of 750 VDC for 1 minute at sea level between adjacent wires, between wire and covering, and covering to exterior of cable including cable edges. Covering pulled back 0.125” from cable end.	EIA-364-20
Insulation resistance	Mega ohms	>1000	Measured between adjacent wires, between wire and covering, and covering to exterior of cable including cable edges with 500 VDC applied for 1 minute.	EIA-364-21

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Signal Integrity

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Description or Parameter	**Units**	**Values / Limits**	**Requirement or Conditions**	**Test Standard or Method**
Differential impedance	Ohms	95 ± 5	Rise time of 35ps. Measured on non-edge wires.	EIA-364-108
Differential insertion loss	dB	< 3 typ.	Measured one meter length samples. Smooth curve remains above limit at 2.5 GHz. Measured on non-edge wires.	EIA-364-101
Diff-to-common mode conversion	dB	< -15	Measured one meter length samples from 50 MHz to 6 GHz. Measured on non-edge wires.	
Intra pair skew	ps/m	< 15	Measured one meter length samples with TDR method. Rise time of 35ps. Measured on non-edge wires.	

Mechanical

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

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Description or Parameter	**Units**	**Values / Limits**	**Requirement or Conditions**	**Test Standard or Method**
Critical dimension measurements	Inches	See related customer drawing	Measure dimensions specified by related customer drawing.	
Peel force	Lbf/conductor	0.0204 ± 0.0075	Prepare sample by removing both edge conductors.	Measured by 180° peel direction, no faster than 2" peeled per minute.

Environmental

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Environmental test samples prepared using 1 meter samples in both flat and H-folded configurations. H-fold includes three 180° folds plus two 45° folds. Recommended bend radius of folds >0.075"

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Description or Parameter	**Units**	**Values/ Limits**	**Requirement or Conditions**	**Test Standard or Method**
Temperature life (thermal aging)	Degrees C Hours	85 1008	No physical abnormalities. Meets SI requirements.	EIA-364-17 Method A, Condition 3D
Thermal shock	Degrees C Cycles	-55 & 85 5	No physical abnormalities. Meets SI requirements.	EIA-364-32 Table 2, Condition I
Humidity-temperature cycling	Degrees C % RH Cycles Degrees C	25 to 65 80 to 100% 24 -10, cold shock	No physical abnormalities. Meets SI requirements.	EIA-364-31 Condition B, Method III, Figure 1

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Figures

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

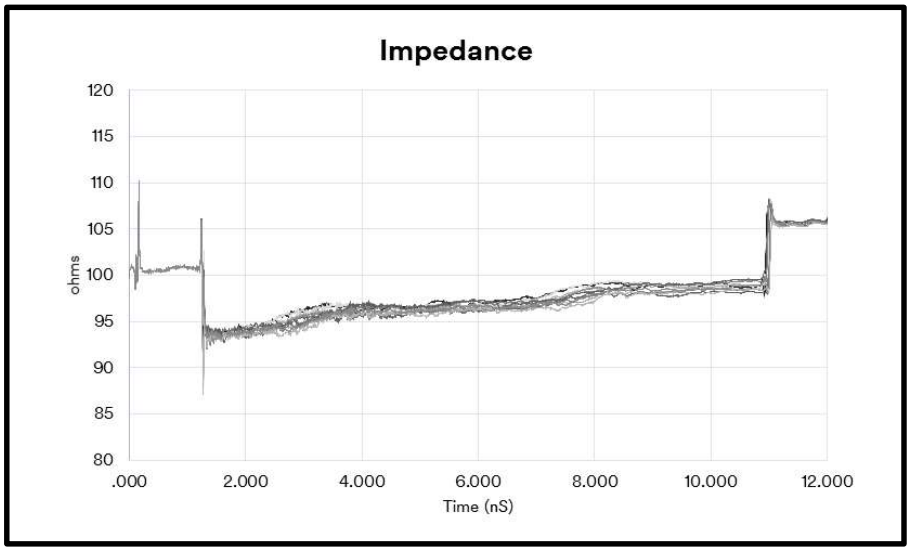

Figure 1: Representative impedance profile

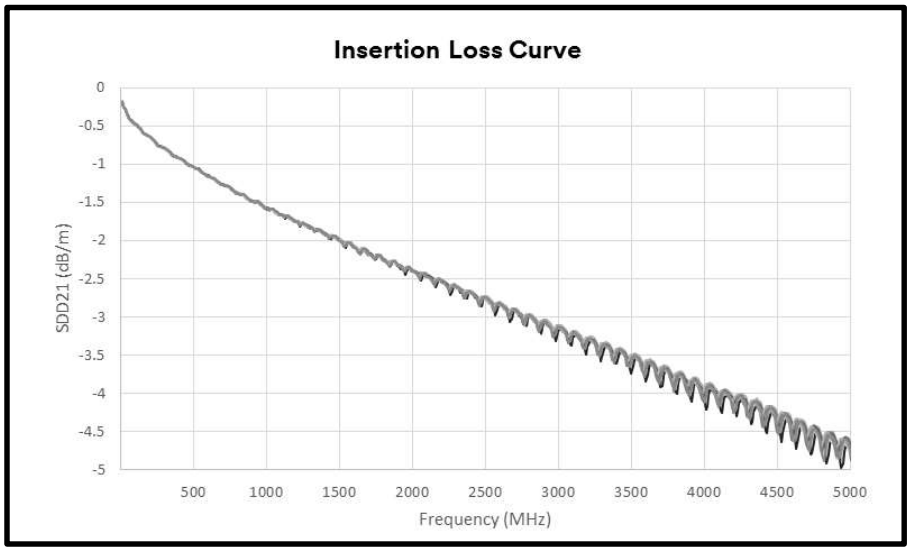

Figure 2: Representative insertion loss curve

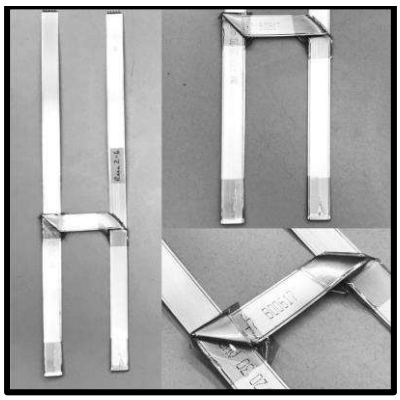

Figure 3: Representative H-fold setup

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Regulatory: For regulatory information about this product, contact your 3M representative.

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3M Electronics Materials Solutions Division
Interconnect Solutions
6801 River Place Blvd.
Austin, TX 78726-9000
www.3M.com/Interconnect

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