Verizon NEBS™ Compliance: FTTP Wall Plates, Moldings & Raceways

Verizon Technical Purchasing Requirements

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CHANGE CONTROL RECORD:

Version	Date	Action*	Reason for Revision
1	*08/20/2007*	New	New Document
* New, Add, Delete, Change, Reissue			

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1.0 PURPOSE

The purpose of this Verizon Technical Purchasing Requirement document is to provide FOC testing requirements for FTTP Wall Plates, Moldings & Raceways.

2.0 SCOPE

FOC Products

3.0 REFERENCES

FOC Memo #11 2005	GR-3126 Punch List Requirements for FTTP Wall Plates and moldings for MDUs
FOC Memo #11a 2005	PFOC GR-3126 FTTP Wall Plates-Moldings Rev-2
GR-20-CORE	Generic Requirements for Optical Fiber and Optical Fiber Cable
GR-63-CORE	NEBS™ Requirements: Physical Protection
GR-209-CORE	Generic Requirements for Product Change Notices (PCNs)
GR-326-CORE	Generic Requirements for Singlemode Optical Connectors and Jumper Assemblies
GR-449-CORE	Generic Requirements and Design Considerations for Fiber Distributing Frames
GR-771-CORE	Generic Requirements for Fiber Optic Slice Closures
GR-3108-CORE	Generic Requirements for Network Equipment in Outside Plant (OSP)
GR-3115-CORE	Generic Requirements for Copper Cross-Connect Cabinets
GR-3120-CORE	Generic Requirements for Hardened Fiber Optic Connectors (HFOCs)
GR-3126-CORE	Generic Requirements for Wall Plates, Moldings, and Raceways That Support Fiber Optic Services (Including Fiber to the Premises [FTTP])
ASTM B117	Standard Practice for Operating Salt Spray (Salt Fog) Apparatus
ASTM D638	Standard Test Method for Tensile Properties of Plastic
ASTM G154	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
ASTM G21	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

4.0 ACRONYMS

FOC	Fiber Optic Components
FTTP	Fiber to the Premises
HFOC	Hardened Fiber Optic Connector
ITL	Independent Testing Laboratory
MDU	Multiple Dwelling Unit
OSP	Outside Plant
PCN	Product Change Notice

5.0 TEST REQUIREMENTS FOR FTTP WALL PLATES, MOLDINGS & RACEWAYS

Verizon is considering using Plastic and Metallic Wall Plates, Moldings and Raceway for the MDU application. Following are the test requirements for qualifying these units. All the testing must be completed by a Verizon approved ITL.

FOC Test Program for FTTP Wall Plates, Moldings & Raceways	
Task Name	**Comments**
1. Introduction	
1.1 Purpose and Scope	GR-3120 - Telcordia view of wall plate and molding requirements for FTTP (both indoor and outdoor use)
1.2 Target Audience	GR-3120 - users, purchasers, manufacturers and suppliers of wall plates and moldings
1.3 Reason for Issuing GR 3126 Issue 1	GR-3120 - This GR addresses the need for requirements for these products
1.4 Structure and Use of This Document	GR-3120 - This GR includes 7 sections as noted below
1.5 Requirements Terminology	GR-3120 (R) - Requirement, (CR) - Conditional Requirement, (O) - Objective
1.6 Requirement Labeling Conventions	GR-3120 - Discusses numbering system for the GR
1.7 Test, Sample and Retest	3 samples (systems) for each test unless otherwise noted. All samples used for testing must be thermally aged first. See GR-3120 section 1.8. One extra system will be used to simulate real life environments (age and run temperature & humidity cycle) with optical measurements.
2. General Information	
2.1 General Description	See product literature - includes requirements for both wall plates and moldings.
2.2 Operating Environment	Indoor controlled -5C (23F) to 50C (122F) to 85%RH, GR-3108 section 1.3.2, Outdoor -40C (-40F) to 75C (167F) 5 to 95%RH, section 1.3.3 GR-3108.
3. General Requirements	
3.1 Product Samples	See GR-3120 section 3.1. Must be production parts for testing, and labeled with name, model number and date code.
3.2 Product Changes	See GR-3120 section 3.2 - Must follow PCN guidelines per GR-209-CORE

FOC Test Program for FTTP Wall Plates, Moldings & Raceways	
Task Name	**Comments**
3.3 Safety and Reliability	See GR-3120 section 3.3 plus (R) eye safety shutter (CR) Marking GR-449 R3-26. Small parts choke hazard- no removable parts that can be swallowed less than 1.25 inch in diameter. No sharp objects or burrs.
3.4 Listing	See TR-1334 section 2.10, Must meet 2005 NEC and local codes since this will be on a customer premise. Complete system and all components must be Listed.
3.5 Materials	See TR-1334 section 4.1 items 1,2, 3 4, 7 (25%) plastic regrind max. Samples provided with max regrind, and percentage shall be noted. (CR) Glass transition for each plastic shall be provided, minimum 80C
3.6 Craft Interaction	Ability to access fiber without special tools, managing slack storage, ability to enter and open molding and repair live cable. Take live fiber and install and uninstall 3 fibers (see GR-449 craft interaction), max change in IL at 1550 nm of 0.05 dB (see GR-449) and max change in RL at 1550nm of 5dB. Use the sample from section 5.3 temp/cycling. A fiber-retaining clip shall be provided to hold the fiber in place after installation.
3.7 Instructions and labeling	See TR-1334 2.7, 2.8 Instructions shall be provided for installation and use. Marking shall include name, model number and date code. See GR-499 fro labeling
3.8 Package Label	TR-TSY-000081 for packaging. Suppliers name, product number and date code shall be on the outside box. Lettering minimum 3/4 inch
3.9 Toxic Materials	See TR-1334 section 2.4. There shall be no toxic materials as defined by OSHA
3.10 Tools	No special equipment or tools needed for installation
3.11 Self Locking (hinge)	50 cycles open and close at room temp after aging test see section 5.2.
3.12 Color/Paint ability	Muncell color. Moldings, paint with white latex and oil paint, then age for 30 days at 75C no peeling of paint. For peeling see ASTM D2197 and ASTM D3359

FOC Test Program for FTTP Wall Plates, Moldings & Raceways	
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3.13 Intermateability	Accommodate NTT SC adaptors. Must fit on an industry standard single gang outlet box.
3.14 Tamper Resistance	The moldings shall be tamper resistant
3.15 Gaps	Vendor to provide max gaps see UL5A plastic, 5 metallic no surface gaps greater than 1/16 inch.
3.16 Insect (outdoor)	See GR-3115, (R) 1/8 inch for bees, (O) 1mm for fire ants.
3.17 Max Protrusions from Wall	Vendor shall provide product dimensions from flat surface. Wall plates/connectors provide the protrusion from the wall (use GR-326 for the guidelines). For 90 degree connector mount, it shall not be more than 70mm.
3.18 Ability to Cut	Ability to cut using standard tools
3.19 Quality	See GR-3120 section 3.9 (TL9000)
3.20 Grounding	For metal products shall be provided with a means for grounding/bonding
4. Mechanical Requirements	Environmental test sequence is to precede the sequence of mechanical tests in test programs conducted in accordance with the requirements of this document.
4.1 Impact	Tested at -5C (indoor), -40C Outdoor, 5 ft-lbs 4 impacts at 4 different locations One location shall be a corner. See TR-1334 section 5.4
4.2 Drop	Tested at -5C, 10 feet 4 times on concrete surface. See TR1334 section 5.5
4.3 Torque	If screwed parts 20 in-lbs 4 times
4.4 Bend Diameter	GR-449 R 3-96, Minimum Bend Diameter 3 inches or 20 times the diameter of largest cable whichever is greater.
4.5 Flex Test	3 degrees bend test on a 6-foot section with 2-meter bend radius. Optically monitor. Specify configuration in test report
4.6 Bulkheads	50 lb force to push bulkheads.
4.7 Crush	See GR-771, 300lbs at o temp.

FOC Test Program for FTTP Wall Plates, Moldings & Raceways	
Task Name	**Comments**
5. Environmental Requirements	
5.1 Assembly	See GR-771. Product shall be able to be assembled following manufacturers instructions, no special tools, all parts shall be provided in kit.
5.2 Dimensions	Take dimensions of all samples. Then subject to aging and temp/humidity. Take dimensions allowed. No or minimal changes in dimensions are allowed.
5.3 Aging	75C for 30 days, aged in parts
5.4 Temperature and Humidity Cycling	Check adhesive, paint peeling expansion and contraction, Indoors - 60 -12 hours cycles (30 day test) -5C (23F) to 50C (122F) See GR-63 for profile, **Outdoors** see GR-49 60 -12 hours cycles (30 day test) -40C (-40F) to 75C (167F). Mount as intended (including inside and outside right angles) on 3/4-inch plywood surface. Build a complete system and optically monitor before, during and after the test. Take live fiber and install and uninstall 3 fibers (see GR-449 craft interaction), max change in IL at 1625nm of 0.5 dB (see GR-449), max change in RL at 1625 nm of 5 dB. Use maximum jumper size. Install recommended maximum number of fibers for testing. Include install profile that describes installation for test with 3 -D bends. Some 12 inches, some 2 feet. Assume 8x 8 foot walk-in chamber
5.5 Chemical Resistance	Use three sample test bars for each chemical mounted in 3 point test fixture TR-1334 exposed for 30 days 39C (100F) **Indoor** WD-40, Wasp Spray, 10% Igepal, Oil and latex Based House Paint, 3.5% NaOH, **Outdoor** GR3120 3% H2SO4, 0.2N NaOH, NH3, 90% Alcohol, Kerosene, 10% Igepal. Shall not craze or crack and must retain 75% of original strength. Use Instron (cross head speed 20 in/min) at room temp. 23C before and after exposure. Test bars ASTM D638 test bars measuring (2.5 in. by 0.25 in. by 0.125 in.). Load in 3-point test fixture with 0.04 in deflection, see GR-2898 figure 6-10.
5.6 Fungus	Zero rating per ASTM G21 see GR-3120 section 4.4.7

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5.7 UV (outdoor only)	See GR-3120, 3115 R3-21 - Per ASTM G154 2,000 hours, or ASTM 155 1,000 hours on test bars. Shall note craze or crack and must retain 75% of original strength. Use Instron before and after exposure.
5.8 Flammability	Shall be UL-94 5VA. Conduct flame spread test per GR-63 section 4.2. Flames shall completely extinguish 30 seconds after removal of test flame
5.9 Dielectric Withstand	1500V AC for one minute
5.10 Salt Fog Exposure (outdoor only)	ASTM B117 7 days. See GR3120/771 (R) 30 days, (CR) 60 days
6. Optical Performance	
6.1 Optical Performance	GR-771, IL @1625 nm, change no larger than 0.05-dB increase in loss for 90% of fibers and no larger than 0.1 dB for 10% of the fibers.
7. Component Qualification	
7.1 Connectors	Meet GR-326, see GR3120 section 3.5 SC-APC only
7.2 Cable Media	Meet GR-20 *Optical Fiber, see GR-3120 section 3.6 3-mm, 4.7-mm cable*
Notes:	
The product shall be installed using the manufactures instructions and recommended hardware. The configuration is intended to represent a three dimensional installation.	
The wall plate and moldings shall be mounted on an 8-foot square, which is comprised of four, 8 foot by 4 foot, 1/2 inch thick plywood panels. The test will require at least 100 feet of cable, with the total estimated linear footage of moldings to be a minimum of 75 feet. The test set-up must utilize all of the different fittings and linear shaped moldings that make up the product line. The configuration must include the following:	
▪ At least 6 inside corners (90 degree turns)	
▪ At least 6 outside corners (90 degree turns)	

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	▪ At least 6 changes in directions vertically at 90 degrees
	▪ At least two, 135 degree bends
	▪ Simulate going around a 2 foot square column that requires that the molding to box the column
	▪ Install the maximum number of optical cables that fit into the molding. Optically monitor all cables before, during and after testing for a change in loss of no greater than 0.05 dB per fiber except no greater than 0.1 dB for up to 10% all fibers.
	▪ The configuration must utilize all four walls of the square, which will be 8 X 8 feet and 4 feet high. Turns, corners, base, linear runs must be distributed across the set up.