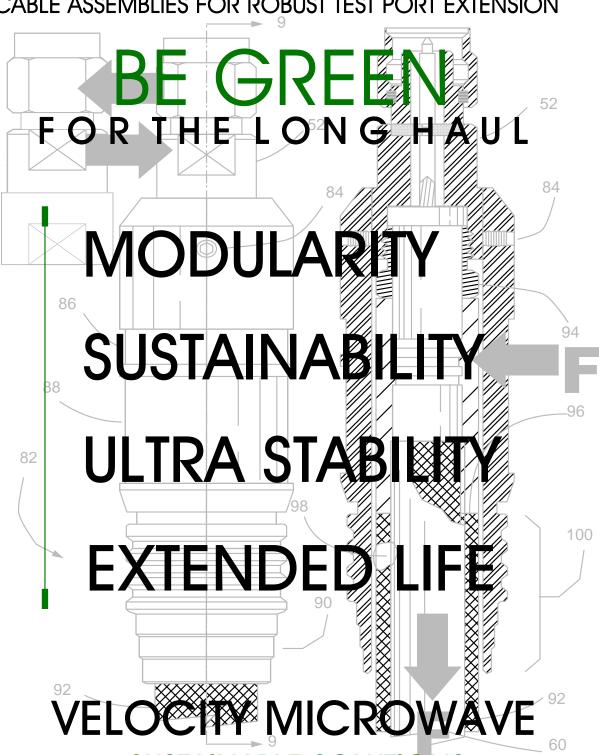
CABLE ASSEMBLIES FOR ROBUST TEST PORT EXTENSION

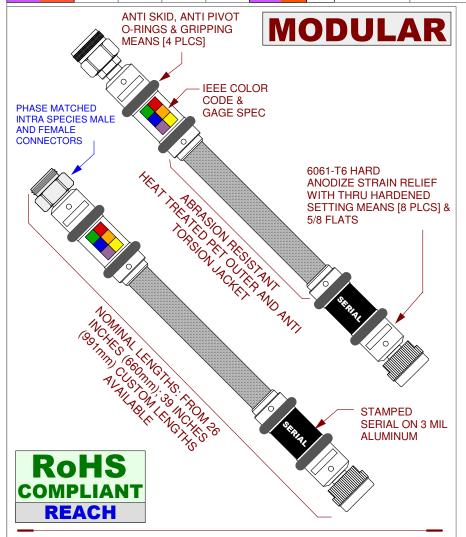


SUSTAINABLE SOLUTIONS

in Microwave Design

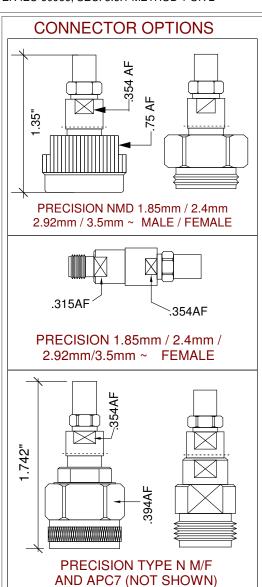
#### VECTOR TEST PORT SERIES~ORDERING OPTIO SERIES CONNECTOR 2 CONNECTOR 1 **GENDER 2** NOM. LENGTH\*\* 18 [2] MF [1] 18NMD F 26 IN (660mm) MF 24 24NMD F MF 29 39 IN (991mm) 29NMD 35 MF F **35NMD CUSTOM** M N MF HYBRID \*\* TOLERANCE: ~[-0.25 / +.750] AS FUNCTION OF CONNECTOR MF 24NMD F 29 35 N APC7 **OPTIONS & PRELOADING** 29NMD F 35 N APC7 MF 35NMD N APC7 MF APC7 MF LEGEND: EXAMPLE: TPX-24NMDF-29F-26 18NMD 1.85mm ruggedized connector 65 Ghz 24NMD 2.4mm ruggedized connector 50 Ghz 29NMD 2.92mm ruggedized connector 40 Ghz 35NMD 3.5mm ruggedized connector 27 Ghz **RECESSED** 1.85mm subminiature 65 Ghz **MARKING** 2.4mm subminiature 50 Ghz **REGION 1** 2.92mm subminiature 40 Ghz 18NMD-F 18NMD-M 7mm hermaphroditic [sexless] 33 Ghz 3.5mm subminiature airline core 33 Ghz Type N connector Cable shall have a 3 mil aluminum plate applied to the test port hand grip that shall be serialized with a permanent stamping. TEST PORT EXTENSION ASSEMBLY 84~87 2.92mm, NMD, HYBRID 3.5mm, TYPE N ~ WARP SERIES 24NMD-M 24NMD-F PATENT PENDING ~ SERIAL No. STAMPED SERIAL # [1] VELOCITY MICROWAVE ~ div. ATX Labs w w w, v e l o c l t y m l c r o w a v e , c o m Cable shall have an applied vinyl IUV resistant label indicating per IEEE color code the species of connector at the DUT 35 29NMD-M 35 29NMD-F end as illustrated below. [1] O-RING, JACKET, LABEL & BOOT COLORS ARE NOT SPECIFIED AND MAY VARY ACROSS LOTS. NOTE: FEMALE APPLIED ART NOT SHOWN N-M N-F 24F 18F 35F 29F **RECESSED MARKING** APC7 IS A HERMAPHRODITIC **REGION 2** CONNECTOR MODE FREE TO 18 GHZ. AVAILABLE DUT TEST PORT. 7 mm APC7 NOTE: TPX TEST PORT EXTENSION ASSEMBLIES ARE DESIGNED FOR VNA DEPLOYMENT AND HAVE ROBUST SUSTAINABLE FEATURES THAT ALLOW FOR CONNECTOR REPLACEMENT In the INTEREST OF OFFERING A LONG TERM SERVICE SOLUTION. THEY CARRY AN INDUSTRY LEADING TWO YEAR WARRANTY.

PHASE & AMPLITUDE STABILITY [TYP/MAX]**				SWR / ATTENUATON			ELECTRICAL CHARACTERISTICS & NOTES				
ASSEMBLY	PHA	SE $\Delta$	AMPLITUDE $\Delta$		MAX [GHz]	SWR	TYPICAL	CONNECTOR MATING CYCLES		2K, 5K [SUBMNATURE, N] *	
1.85mm - 26	+/-5.0	+/-9.5	+/-0.050	+/100	65 GHZ	Z 1.50 MAX	5.10dB	* ASSUMES MATING WITH CALIBRATED TORQUE WRENCH, AXIAL ALIGNMENT, AND THE ABSENCE OF ECCENTRICITY UPON THREADED ENGAGEMENT			
1.85mm - 39	+/-6.5	+/-11	+/-0.080	+/-0.15	65 GHZ		7.40 dB				
2.4mm - 26	+/-3.75	+/-5.25	+/-0.030	+/-0.85	50 GHZ 1.45	1.45	3.04 dB	COMPRESSION (SWR	1000 LBS	S. PER 2 INCH STEPPING PLATE;	
2.4mm - 39	+/-4.95	+/-9.95	+/-0.050	+/-0.15	30 GHZ	MAX	4.56 dB	IMPAIRMENT WITH		MIL-T-81490 SEC. 4.7.18 CONCENTRATED AXIAL /	
2.9mm - 26	+/-3.25	+/-4.50	+/-0.030	+/-0.85	40 GHZ	HZ 1.40 MAX	2.42 dB	RECOVERY)	NORMAL	LOAD.	
2.9mm - 39	+/-4.50	+/-7.90	+/-0.050	+/-0.15	40 GHZ		3.63 dB	FLEXURE (CYCLES)	50K CYC	LES MINIMUM; FLEX ENDURANCE PER	
3.5mm - 26	+/-3.50	+/-4.50	+/-0.030	+/-0.85	26.5 GHZ	1.35	1.83 dB	FLEXURE (OTOLES)	IEC60966 ~1, SECTION 9.3.		
3.5mm - 39	+/-4.95	+/-7.75	+/-0.050	+/-0.15	20.5 GHZ	MAX	2.74 dB	SHIELDING EFFECTIV	ENESS	>95 dB [ TO 18 GHZ]	
APC7/ N - 26	+/-2.95	+/-3.50	+/-0.040	+/-0.85	18 GHZ	1.35	1.40 dB	LL PED IEG GOOG GEG G A LIETLIOD LOD G			
APC7/ N - 39	+/-3.95	+/-5.70	+/-0.050	+/-0.15		MAX	2.11 dB	** PER IEC-60	1966, SEC	. 8.6.1 METHOD 1 OR 2	



# SUSTAINABLE FEATURES FOR EXTENDED SERVICE LIFE

		_
GENERAL	SPECIFICATION	
CABLE DIAMETER [NOM]	~ .60 INCHES [15.2 mm]; MID SPAN	
DYNAMIC BEND RADIUS	2.5 INCHES	
OUTER JACKET	POLYETHYLENE TEREPTHALATE	
TEMPERATURE RANGE	-55 / + 135 DEGREES C	
MATING TORQUE	8 - 12 IN-LBS	
CONNECTOR INTERFACES	IEEE287 GPC / LPC	П
CRUSH PROTECTION	STAINLESS STEEL INTERLOCK	]
PROPAGATION VELOCITY NOM.	83% [TO 40, 65 GHZ], 2.4MM [76%]	
RF LEAKAGE	>100 dB->18 GHZ [MIL-T-81490]	
STRAIN RELIEF	6061T6 MIL-A-8625 Type III HARD COAT	
FLAMMABILITY	UL94	
ABRAISION RESISTANCE	CALIBRASE H-18/500G/800CYC	
WEIGHT [26 INCH ASSEMBLY]	~9.6 oz [3.5mm ASSEMBLY]	



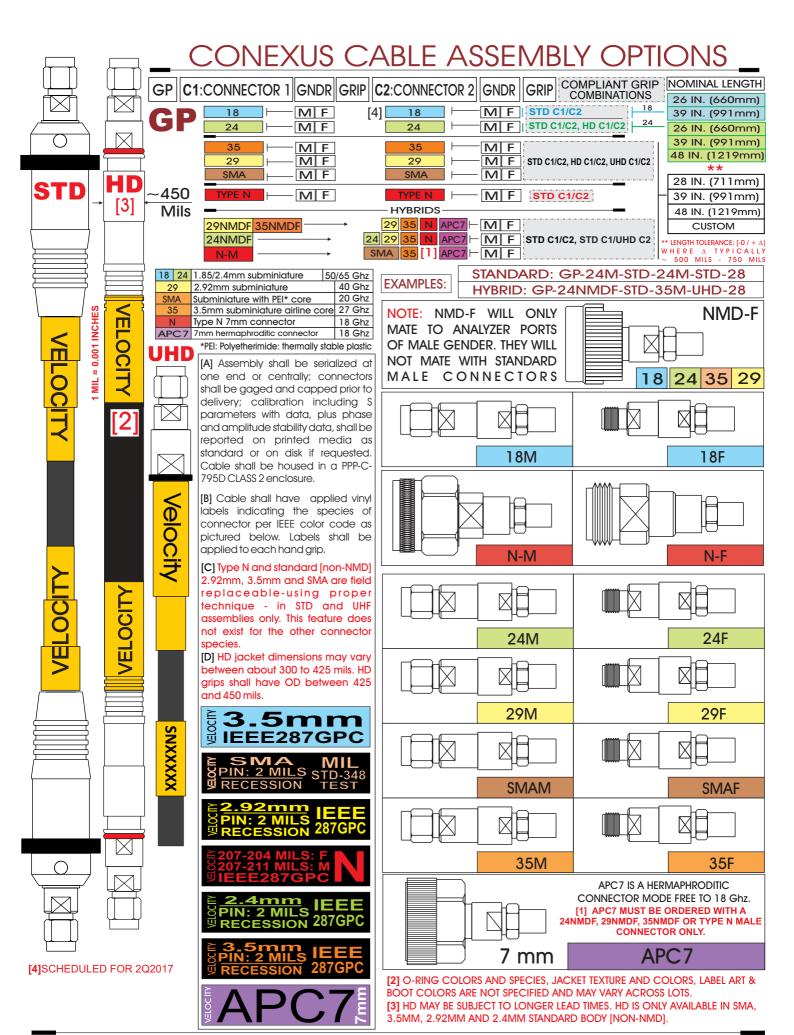
NOTES: [i] THE VECTOR SERIES WAS DESIGNED AS A LONG TERM SERVICE SOLUTION FOR DEDICATED TEST CABLE DEPLOYMENT TO SATISFY VNA CONNECTIVITY ACROSS ALL SPECIES FROM TYPE N TO 1.85mm; [ii] INDUSTRY LEADING 2 YEAR WARRANTY; [iii] LONG TERM SUSTAINABILITY BY VIRTUE OF MODULAR, REPAIRABLE PLATFORM WITH HOT, SOS SUPPORT.

## **VECTOR** SERIES

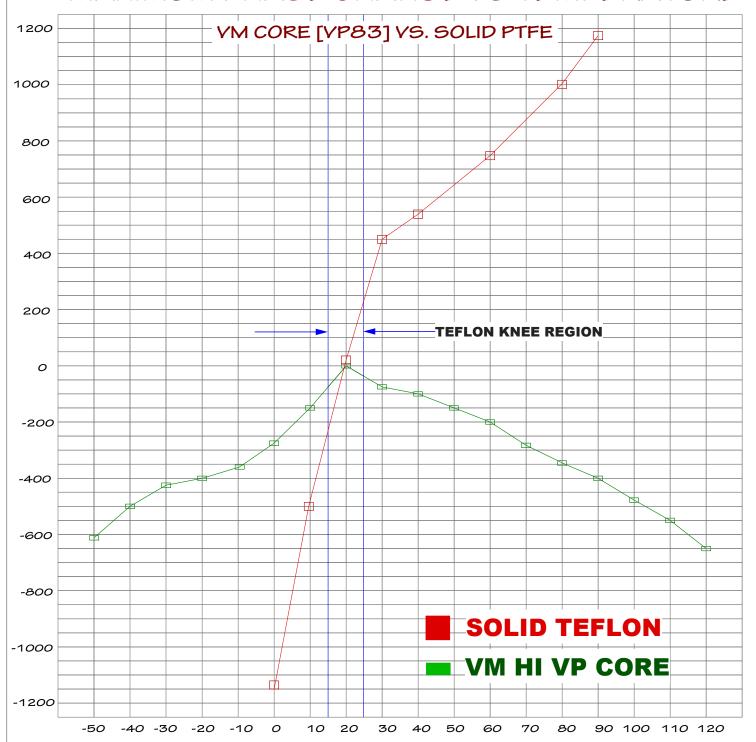
MODULAR TEST CABLES FOR DEDICATED VNA DEPLOYMENT

ULTRA PHASE STABLE WITH TEMPERATURE & FLEXURE

Velocity Microwave ~ div. ATX Labs www.velocitymicrowave.com



## MAXIMUM PHASE CHANGE VS TEMPERATURE



 $\Delta\Phi$  = 3.63E-05 x L x F x PPM, WHERE L [INCHES], F [GHZ], & PPM AS GIVEN PER CHART. FOR EXAMPLE, FOR L = 24 INCHES, F = 40 GHZ, PPM = 75, THEN  $\Delta\Phi$  = 2.6 DEGREES MAX PHASE VARIATION IN THE REGION OF THE TEFLON KNEE BETWEEN 15C AND 25C. **P3** 

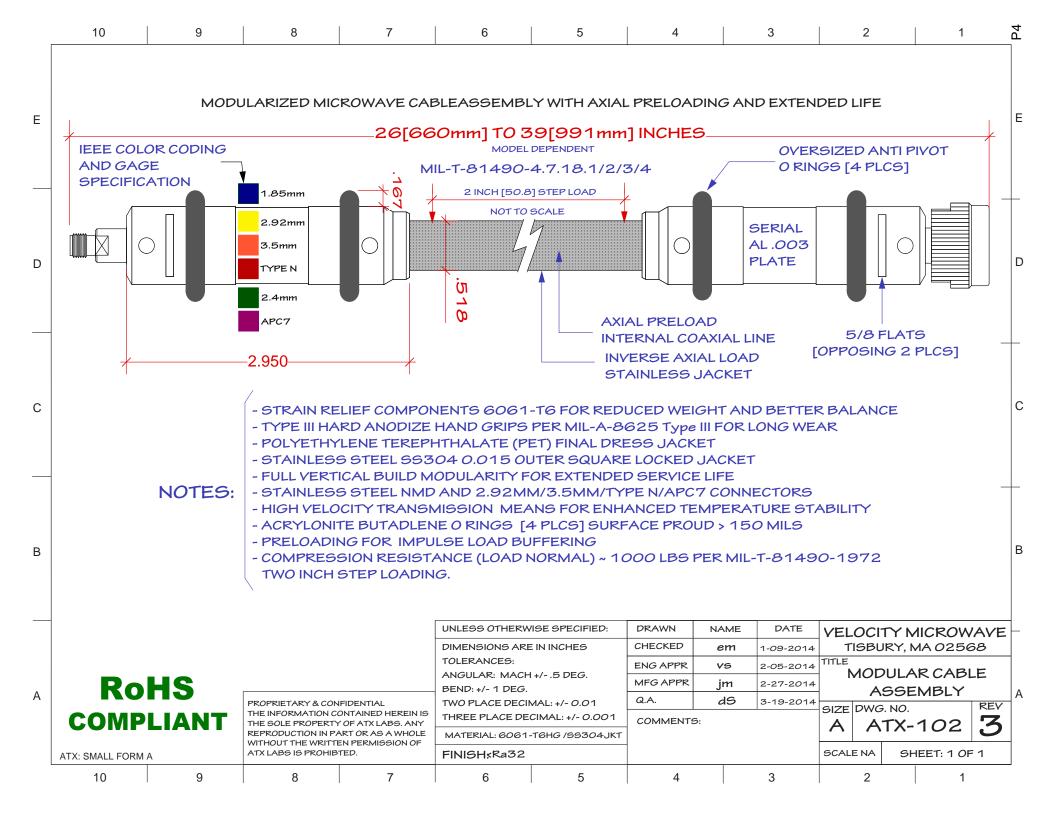
NOTES: [i] THE VECTOR SERIES WAS DESIGNED AS A LONG TERM SERVICE SOLUTION FOR DEDICATED TEST CABLE DEPLOYMENT TO SATISFY VNA CONNECTIVITY ACROSS ALL SPECIES FROM TYPE N TO 1.85mm; [ii] INDUSTRY LEADING 2 YEAR WARRANTY WITH LONG TERM SUSTAINABILITY BY VIRTUE OF MODULAR PLATFORM AND GEOMETRY.

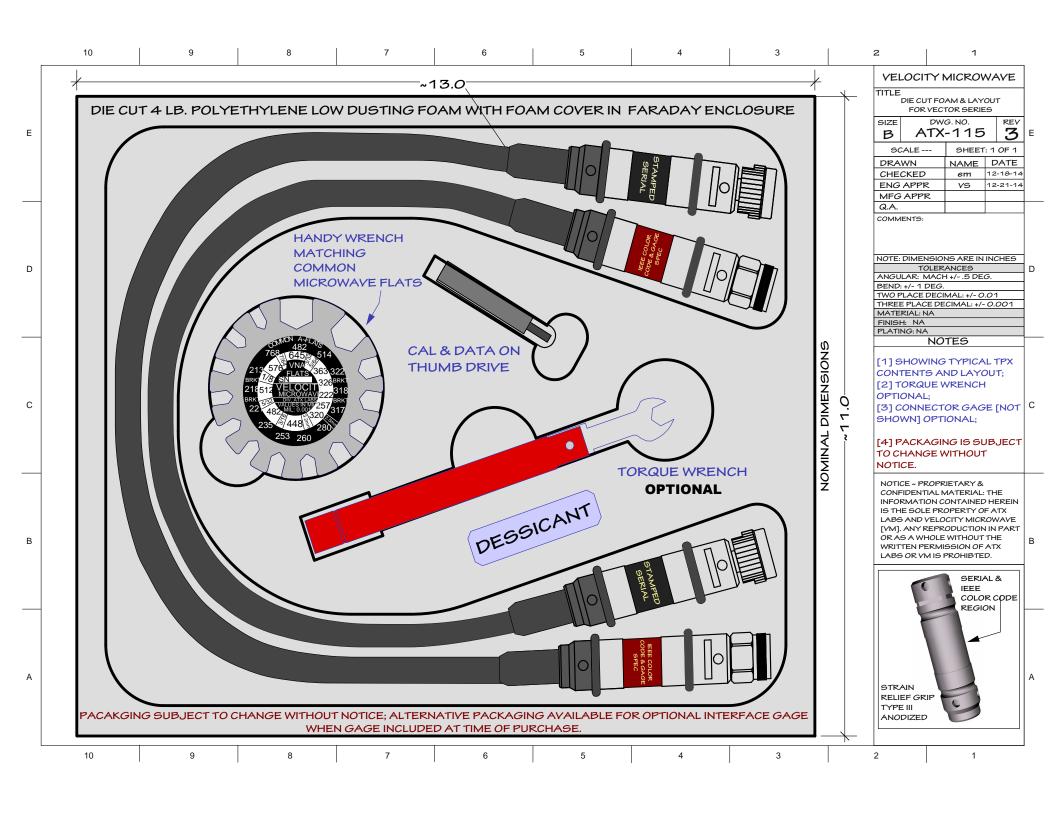


MODULAR TEST CABLES FOR DEDICATED VNA **DEPLOYMENT** 

**ULTRA PHASE STABLE WITH TEMPERATURE & FLEXURE** 

Velocity Microwave ~ div. ATX Labs www.velocitymicrowave.com







# Velocity Microwave (div. ATX Labs) RoHS Compliance Certification



Velocity Microwave [hereafter designated VM], a division of ATX Labs, certifies that all of the products manufactured under the Velocity Microwave brand are in compliance with EU Directive 2011/65EU on the use of certain substances employed in electrical, electronic and microwave equipment that have been designated as hazardous.

Restricted Substance	Maximum Threshold Limit		
Cadmium and its compounds	100 ppm (0.01 weight %)		
Mercury and its compounds	1000 ppm (0.1 weight %)		
Hexavalent chromium and its compounds	1000 ppm (0.1 weight %)		
Lead and its compounds *	1000 ppm (0.1 weight %)		
Polybrominated biphenyls (PBB)	1000 ppm (0.1 weight %)		
Polybrominated diphenyl ethers (PBDE)	1000 ppm (0.1 weight %)		
Decabromine diphenyl ether (DECA BDE)	1000 ppm (0.1 weight %)		

<sup>\*</sup> Except when allowed by the Directive. For example, 3500 ppm in steel, 4000 ppm in aluminum alloys and 40000 ppm in copper alloys.

\*

# VM Partial Materials List

The products in the following classes: Labflex cable assemblies; Benchflex cable assemblies; Conexus cable assemblies; Conexus HD cable assemblies; Continuum cable assemblies; Vector cable assemblies; Ergon interface gages and kits, Legacy interface gages and kits, Element interface gages and kits, Datum interface gages and kits; VM repair kits; VM connectors of species SMA, 2.92mm (K); 3.5mm; 2.4mm; 1.85mm; Type N; TNC; APC-7 — contain some or all of the following materials — as well as materials not listed though nevertheless fully compliant with EU Directive 2011/65EU.

Material Class	Finish, Construction or Reference Standard
Alloy Steel	Copper Clad per ASTM B-501
Soft Copper	Silver plated per ASTM B-298
Copper foil	Silver plated per ASTM-B-298

Expanded PTFE	Type F6 per N	IL-C-17 or ASTM D-14577					
FEP	Per ASTM D-2116, FQQ flammability test UL94						
	(BLANK	)					
	Class AISI-303 UNS20200 SAE30303 – Per:						
	per AMS 5664U Type 1	ASTM A582 12	ASTM A262 10 Practice A/E				
Stainless Steel	AASTM E112 96	Federal Spec QQ-S- 764B	DFARS 232.225.7009 10-4-11				
	ASTM A484 13	DIN 50049/en10204 Type 3.1	ASTM 484 13				
	Passivation per ASTM A967, AMS 2700, QQ-P-35						
PEI (Polyetherimide)	Resin certified to ASTM D 5205 PEI 0113						
Solder	SnAgCu: ~ 2.5% Silver, 0.9% copper, (100-2.5-0.9)% Tin balance; Typ.						
Aluminum	6061T6, anodized TYPES II & III per						
	Thin wall Heat shrinkable polyolefin MIL-DTL-23053/5 Class 1 & 3 UL224 corrosion and fire rated						
Polyolefin	Thick wall Heat shrinkable polyolefin MIL-DTL-23053/5 Class 1 & 3 UL224 corrosion and fire rated; encapsulating modified polyamide adhesive						
	Ultra thin wall Heat shrinkable polyolefin MIL-DTL-23053/5 Class 1 & 3 UL224 corrosion and fire rated						
	Closed cell polyethylene, 2.3 lb – 4 lb. ASTM D 3575-93						
Foam	Convoluted static dissipative <10e11 ohms polyurethane pink foam laminated to top and fitted in bottom; California 117 - Note: All Testing Done By ASTM D  3574Standard Rev. 1, 12-3-02						
Jacketing	Polyethylene terepthalate FMVSS302, UL94 flame resistance, ASTM G21 Fungus resistance						
	Oil resistant Buna N O-ring SAE J200 Durometer A70						
Rubber	High temperature Silicone SAE J200 Durometer A70						
	Steam Resistant EPDM SAE J200 Durometer A70						
Packaging	ESD shielding with lid closed; "Faraday Cage" effect restricting electrostatic charges to exterior; tested per FED-STD-101, Method 3005 for reducible sulfur						
Vinyl	Connector caps durometer of 75A, maximum temperature of 180° F assorted colors						
Villyi	Vinyl substrate 30 mil (.08mm) magnetic mats and signage						
Pigments	Inkjet applied Orcal eco-solvent based inks UV protected						
Adhesives	Adhesives Polyacrylate, Acrylate polymers permanent, transparent						
	(BLANK	(1)					

# Velocity Microwave

(div. ATX Labs)

# **REACH** Compliance Certification



Velocity Microwave is deeply committed to the European Union Regulation governing the Registration, Evaluation and Authorization of Chemical (**REACH EC Regulation Number 1907** / **2006**).

[I] Velocity Microwave further represents that it monitors both its internal manufacturing process, as well as that of components in its supply chain, to be free of any substance on the Candidate List of Substances of Very High Concern for Authorization (SVHC) – published in accordance with Article 59(10) of the REACH Regulation – and deemed authentic in only the following locus:

### https://echa.europa.eu/candidate-list-table

[II] Velocity Microwave still further represents that no substances on the REACH SVHC Candidate list, per the above, shall be found in a concentration greater than 0.1% - by weight - in any of the products below in the list designated as **2016 PMVM**, manufactured by Velocity Microwave, or transferred through Velocity Microwave as a pass through agent by either inattention or design.

#### **2016PMVM**

#### Microwave Test and Measurement Cable Assemblies

Labflex microwave test cable assemblies commonly designated with the prefix LF; Benchflex microwave test cable assemblies commonly designated with the prefix BF; Conexus microwave test cable assemblies commonly designated with the prefix GP; Conexus HD microwave test cable assemblies commonly designated with the prefix GP and the subsequent designator HD; Continuum microwave test cable assemblies commonly designated with the prefix CN; Vector microwave test cable assemblies commonly designated with the prefix TPX; Custom Assemblies developed to meet specific customer requirement; VM repair kits deployed as field repair aids for the above microwave test cables.

## **Microwave Gaging Apparatus**

Ergon microwave connector interface gages and kits containing ancillary components, Legacy microwave connector interface gages and kits containing ancillary components, Datum microwave connector interface gages and kits containing ancillary components; Element microwave connector interface gages and kits containing ancillary components; Ancillary data port connectors and devices for Datum Gage.

#### Microwave Connectors ~Subminature and Larger Families

**SMA** microwave connector of the subminiature class; **2.92mm** (K) microwave connector of the subminiature class; **3.5mm** microwave connector of the subminiature class; **2.4mm** microwave connector of the subminiature class; **1.85mm** microwave connector of the subminiature class; **Type N** microwave connector 7mm class; **APC7** hermophroditic microwave connector of the 7mm class; **TNC** microwave connector.

#### **Microwave Torquing Apparatus**

**8 in-lb Torque wrench** with 5/16 dimension designated for use with subminiature microwave connectors; **12 in-lb Torque wrench** with 19mm dimension designated for use with 7mm of the Type N class microwave connectors; **12 in-lb Torque wrench** with 20 dimension designated for use with 7mm of the Type N class microwave connectors; **12 in-lb Torque wrench** with 19mm dimension designated for use with NMD class microwave connectors; **12 in-lb Torque wrench** with 20 dimension designated for use with NMD class microwave connectors; **8 in-lb Torque wrench** with 19mm dimension designated for use with NMD class microwave connectors; **8 in-lb Torque wrench** with 20 dimension designated for use with NMD class microwave connectors; **20 in-lb Torque wrench** with 5/16 dimension designated for use with subminiature microwave connectors as a repair and installation aid.

### **Velocity Microwave**

[Div. ATX Labs] Located at:

#### **Production**

151 Beach Road, Unit 1B Vineyard Haven, MA 02568 Phone: 508-338-2333

**Material Test & Development** 

9 Beechtree Road, Chilmark, MA 02535 Phone: 508-645-7980

www.velocitybyGTE.com