

# LS2-HMNM-1M-D

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D-CLASS LSF2-50 SureFlex® Jumper with interface types 4.3-10 Male and N Male, 1 m

- WARNING: DO NOT MATE WITH 4.1-9.5 DIN

## Product Classification

<b>Product Type</b>	SureFlex® D-CLASS, dynamic PIM
<b>Product Brand</b>	HELIAX®   SureFlex®
<b>Product Series</b>	LSF2-50

## General Specifications

<b>Body Style, Connector A</b>	Straight
<b>Body Style, Connector B</b>	Straight
<b>Interface, Connector A</b>	4.3-10 Male
<b>Interface, Connector B</b>	N Male
<b>Specification Sheet Revision Level</b>	A

## Dimensions

<b>Length</b>	1 m   3.281 ft
<b>Nominal Size</b>	3/8 in

## Logo Image

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## Electrical Specifications

<b>3rd Order IMD Dynamic</b>	-119 dBm
<b>3rd Order IMD Dynamic Test Method</b>	Two +43 dBm carriers per IEC 62037

## VSWR/Return Loss

Frequency Band	VSWR	Return Loss (dB)
698–970 MHz	1.065	30.04
1700–2200 MHz	1.065	30.04
2200–2700 MHz	1.083	27.99
3400–3800 MHz	1.222	20.01
4000–6000 MHz	1.222	20.01

## Jumper Assembly Sample Label

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## Environmental Specifications

### Immersion Test Method

Meets IEC 60529:2001, IP68 in mated condition

## Included Products

- LS2NM-S2 - N Male for 3/8 in LSF2-50 cable, factory attached
- LSF2-50 - LSF2-50, HELIAX® Superflexible Foam Coaxial Cable, corrugated copper, 3/8 in, black PE jacket (Not for Individual Sale - Jumpers only)
- P4HM-S2 - 4.3-10 Male for 3/8 in LSF2-50 cable, factory attached

# LS2NM-S2

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N Male for 3/8 in LSF2-50 cable, factory attached

## Product Classification

<b>Product Type</b>	Wireless and radiating connector
<b>Product Brand</b>	HELIAX®

## General Specifications

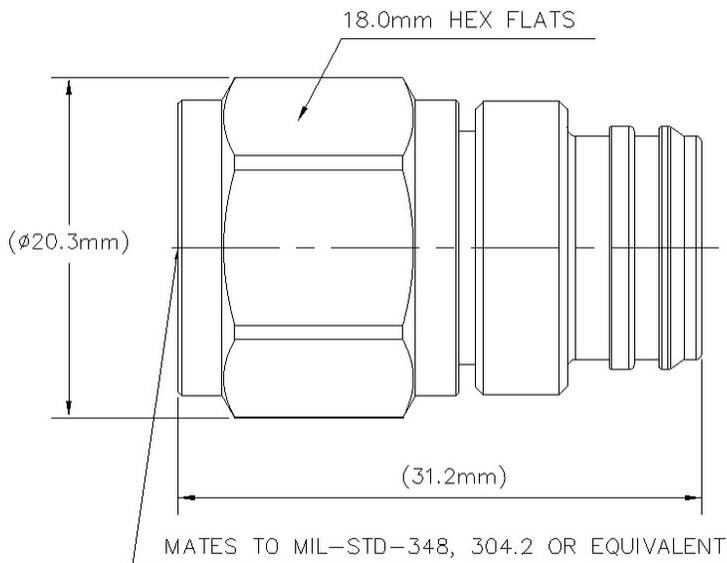
<b>Body Style</b>	Straight
<b>Cable Family</b>	LSF2-50
<b>Inner Contact Attachment Method</b>	Solder
<b>Inner Contact Plating</b>	Silver
<b>Interface</b>	N Male
<b>Outer Contact Attachment Method</b>	Solder
<b>Outer Contact Plating</b>	Trimetal

## Dimensions

<b>Length</b>	31.2 mm   1.228 in
<b>Diameter</b>	20.25 mm   0.797 in
<b>Nominal Size</b>	3/8 in

## Outline Drawing

# LS2NM-S2



## Electrical Specifications

<b>3rd Order IMD at Frequency</b>	-110 dBm @ 910 MHz
<b>3rd Order IMD Test Method</b>	Two +43 dBm carriers
<b>Insertion Loss Coefficient, typical</b>	0.05
<b>Cable Impedance</b>	50 ohm
<b>Connector Impedance</b>	50 ohm
<b>dc Test Voltage</b>	2500 V
<b>Inner Contact Resistance, maximum</b>	1 mOhm
<b>Insulation Resistance, minimum</b>	5000 MOhm
<b>Operating Frequency Band</b>	0 – 6000 MHz
<b>Outer Contact Resistance, maximum</b>	0.25 mOhm
<b>Peak Power, maximum</b>	10 kW

## VSWR/Return Loss

<b>Frequency Band</b>	<b>VSWR</b>	<b>Return Loss (dB)</b>
<b>0–3.8 GHz</b>	1.025	38.17
<b>3.8–6 GHz</b>	1.046	32.96

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## Mechanical Specifications

<b>Connector Retention Tensile Force</b>	200 N   44.962 lbf
<b>Connector Retention Torque</b>	2.7 N-m   23.897 in lb
<b>Coupling Nut Proof Torque</b>	1.7 N-m   15.046 in lb
<b>Coupling Nut Retention Force</b>	450 N   101.164 lbf
<b>Interface Durability</b>	500 cycles
<b>Mechanical Shock Test Method</b>	IEC 60068-2-27

## Environmental Specifications

<b>Operating Temperature</b>	-55 °C to +85 °C (-67 °F to +185 °F)
<b>Storage Temperature</b>	-65 °C to +125 °C (-85 °F to +257 °F)
<b>Corrosion Test Method</b>	IEC 60068-2-11
<b>Immersion Depth</b>	1 m
<b>Immersion Test Mating</b>	Mated
<b>Immersion Test Method</b>	IEC 60529:2001, IP68
<b>Moisture Resistance Test Method</b>	IEC 60068-2-3
<b>Thermal Shock Test Method</b>	IEC 60068-2-14
<b>Vibration Test Method</b>	IEC 60068-2-6

## Packaging and Weights

<b>Weight, net</b>	30.74 g   0.068 lb
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## Regulatory Compliance/Certifications

<b>Agency</b>	<b>Classification</b>
CHINA-ROHS	Below maximum concentration value
REACH-SVHC	Compliant as per SVHC revision on <a href="http://www.andrew.com/ProductCompliance">www.andrew.com/ProductCompliance</a>
ROHS	Compliant
UK-ROHS	Compliant



## \* Footnotes

**Insertion Loss Coefficient, typical** 0.05√freq (GHz) (not applicable for elliptical waveguide)

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**Immersion Depth**

Immersion at specified depth for 24 hours

# LSF2-50



LSF2-50, HELIAX® Superflexible Foam Coaxial Cable, corrugated copper, 3/8 in, black PE jacket (Not for Individual Sale - Jumpers only)

## Product Classification

<b>Product Type</b>	Coaxial wireless cable
<b>Product Brand</b>	HELIAX®   SureFlex®
<b>Product Series</b>	LSF2-50   MLOC
<b>Ordering Note</b>	ANDREW® standard product (Global)

## General Specifications

<b>Flexibility</b>	Superflexible
<b>Jacket Color</b>	Black
<b>Performance Note</b>	Attenuation values typical, guaranteed within 5%

## Dimensions

<b>Diameter Over Dielectric</b>	7.645 mm   0.301 in
<b>Diameter Over Jacket</b>	11.024 mm   0.434 in
<b>Inner Conductor OD</b>	3.048 mm   0.12 in
<b>Outer Conductor OD</b>	9.906 mm   0.39 in
<b>Nominal Size</b>	3/8 in

## Electrical Specifications

<b>Cable Impedance</b>	50 ohm $\pm$ 1 ohm
<b>Capacitance</b>	80.7 pF/m   24.597 pF/ft
<b>dc Resistance, Inner Conductor</b>	3.65 ohms/km   1.113 ohms/kft
<b>dc Resistance, Outer Conductor</b>	4.64 ohms/km   1.414 ohms/kft
<b>dc Test Voltage</b>	2500 V
<b>Inductance</b>	0.202 $\mu$ H/m   0.062 $\mu$ H/ft
<b>Insulation Resistance</b>	100000 MOhms-km
<b>Jacket Spark Test Voltage (rms)</b>	5000 V
<b>Operating Frequency Band</b>	1 – 10200 MHz

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<b>Peak Power</b>	15.6 kW
<b>Velocity</b>	82 %

## VSWR/Return Loss

<b>Frequency Band</b>	<b>VSWR</b>	<b>Return Loss (dB)</b>
<b>680–800 MHz</b>	1.201	20.79
<b>800–960 MHz</b>	1.201	20.79
<b>1700–2200 MHz</b>	1.201	20.79
<b>2300–2700 MHz</b>	1.201	20.79
<b>3400–3800 MHz</b>	1.201	20.79

## Attenuation

<b>Frequency (MHz)</b>	<b>Attenuation (dB/100 m)</b>	<b>Attenuation (dB/100 ft)</b>	<b>Average Power (kW)</b>
<b>1.0</b>	0.422	0.129	15.6
<b>1.5</b>	0.501	0.153	15.6
<b>2.0</b>	0.567	0.173	14.27
<b>10.0</b>	1.179	0.359	6.86
<b>20.0</b>	1.641	0.5	4.93
<b>30.0</b>	1.998	0.609	4.05
<b>50.0</b>	2.567	0.782	3.15
<b>85.0</b>	3.342	1.019	2.42
<b>88.0</b>	3.4	1.036	2.38
<b>100.0</b>	3.625	1.105	2.23
<b>108.0</b>	3.768	1.148	2.15
<b>150.0</b>	4.447	1.355	1.82
<b>174.0</b>	4.795	1.461	1.69
<b>200.0</b>	5.147	1.569	1.57
<b>204.0</b>	5.199	1.585	1.56
<b>300.0</b>	6.336	1.931	1.28
<b>400.0</b>	7.351	2.241	1.1
<b>450.0</b>	7.815	2.382	1.03
<b>460.0</b>	7.905	2.409	1.02
<b>500.0</b>	8.257	2.517	0.98
<b>512.0</b>	8.36	2.548	0.97
<b>600.0</b>	9.084	2.769	0.89

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<b>700.0</b>	9.851	3.003	0.82
<b>800.0</b>	10.572	3.222	0.77
<b>824.0</b>	10.739	3.273	0.75
<b>894.0</b>	11.214	3.418	0.72
<b>960.0</b>	11.648	3.55	0.69
<b>1000.0</b>	11.904	3.628	0.68
<b>1218.0</b>	13.231	4.033	0.61
<b>1250.0</b>	13.417	4.089	0.6
<b>1500.0</b>	14.806	4.512	0.55
<b>1700.0</b>	15.848	4.83	0.51
<b>1794.0</b>	16.32	4.974	0.5
<b>1800.0</b>	16.35	4.983	0.49
<b>2000.0</b>	17.321	5.279	0.47
<b>2100.0</b>	17.791	5.423	0.45
<b>2200.0</b>	18.253	5.563	0.44
<b>2300.0</b>	18.706	5.701	0.43
<b>2500.0</b>	19.589	5.97	0.41
<b>2700.0</b>	20.445	6.231	0.4
<b>3000.0</b>	21.682	6.608	0.37
<b>3400.0</b>	23.26	7.089	0.35
<b>3600.0</b>	24.022	7.321	0.34
<b>3700.0</b>	24.396	7.436	0.33
<b>3800.0</b>	24.767	7.549	0.33
<b>3900.0</b>	25.134	7.661	0.32
<b>4000.0</b>	25.498	7.771	0.32
<b>4100.0</b>	25.858	7.881	0.31
<b>4200.0</b>	26.215	7.99	0.31
<b>4300.0</b>	26.569	8.098	0.3
<b>4400.0</b>	26.92	8.205	0.3
<b>4500.0</b>	27.267	8.311	0.3
<b>4600.0</b>	27.612	8.416	0.29
<b>4700.0</b>	27.954	8.52	0.29
<b>4800.0</b>	28.294	8.623	0.29
<b>4900.0</b>	28.63	8.726	0.28
<b>5000.0</b>	28.965	8.828	0.28

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<b>6000.0</b>	32.183	9.809	0.25
<b>8000.0</b>	38.096	11.611	0.21
<b>8800.0</b>	40.314	12.287	0.2
<b>10000.0</b>	43.516	13.263	0.19

## Material Specifications

<b>Dielectric Material</b>	Foam PE
<b>Jacket Material</b>	PE
<b>Inner Conductor Material</b>	Copper-clad aluminum wire
<b>Outer Conductor Material</b>	Corrugated copper

## Mechanical Specifications

<b>Minimum Bend Radius, multiple Bends</b>	25.4 mm   1 in
<b>Minimum Bend Radius, single Bend</b>	25.4 mm   1 in
<b>Number of Bends, minimum</b>	15
<b>Tensile Strength</b>	118 kg   260.145 lb
<b>Bending Moment</b>	2.2 N-m   19.472 in lb
<b>Flat Plate Crush Strength</b>	2 kg/mm   111.995 lb/in

## Environmental Specifications

<b>Installation temperature</b>	-40 °C to +60 °C (-40 °F to +140 °F)
<b>Operating Temperature</b>	-55 °C to +85 °C (-67 °F to +185 °F)
<b>Storage Temperature</b>	-70 °C to +85 °C (-94 °F to +185 °F)
<b>Attenuation, Ambient Temperature</b>	68 °F   20 °C
<b>Average Power, Ambient Temperature</b>	104 °F   40 °C
<b>Average Power, Inner Conductor Temperature</b>	212 °F   100 °C
<b>EN50575 CPR Cable EuroClass Fire Performance</b>	Fca

## Packaging and Weights

<b>Cable weight</b>	0.11 kg/m   0.074 lb/ft
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## Regulatory Compliance/Certifications

<b>Agency</b>	<b>Classification</b>
CENELEC	EN 50575 compliant, Declaration of Performance (DoP) available
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system

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# P4HM-S2

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4.3-10 Male for 3/8 in LSF2-50 cable, factory attached

## Product Classification

<b>Product Type</b>	Wireless and radiating connector
<b>Product Brand</b>	HELIAX®

## General Specifications

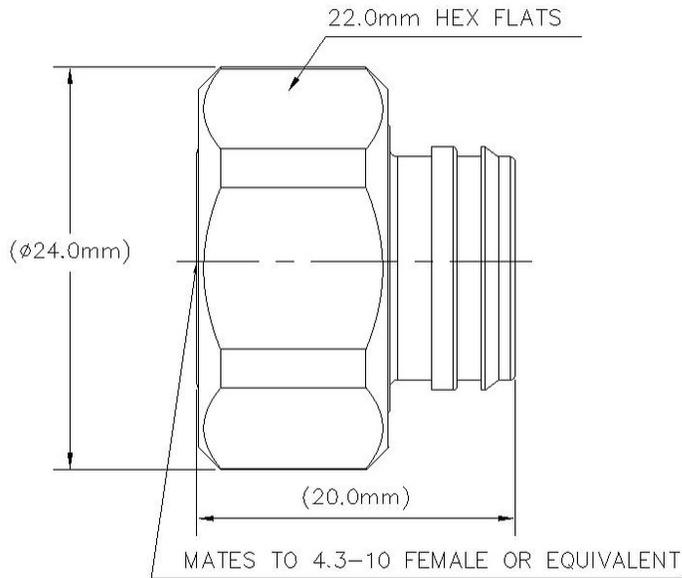
<b>Body Style</b>	Straight
<b>Cable Family</b>	LSF2-50
<b>Inner Contact Attachment Method</b>	Solder
<b>Inner Contact Plating</b>	Silver
<b>Interface</b>	4.3-10 Male
<b>Outer Contact Attachment Method</b>	Solder
<b>Outer Contact Plating</b>	Trimetal

## Dimensions

<b>Length</b>	20.07 mm   0.79 in
<b>Diameter</b>	23.88 mm   0.94 in
<b>Nominal Size</b>	3/8 in

## Outline Drawing

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## Electrical Specifications

<b>3rd Order IMD at Frequency</b>	-119 dBm @ 910 MHz
<b>3rd Order IMD Test Method</b>	Two +43 dBm carriers
<b>Insertion Loss Coefficient, typical</b>	0.05
<b>Cable Impedance</b>	50 ohm
<b>Connector Impedance</b>	50 ohm
<b>dc Test Voltage</b>	2500 V
<b>Inner Contact Resistance, maximum</b>	1 mOhm
<b>Insulation Resistance, minimum</b>	5000 MOhm
<b>Operating Frequency Band</b>	0 – 6000 MHz
<b>Outer Contact Resistance, maximum</b>	1 mOhm
<b>Peak Power, maximum</b>	15 kW

## VSWR/Return Loss

Frequency Band	VSWR	Return Loss (dB)
0–3.8 GHz	1.023	38.89
3.8–6 GHz	1.041	33.94

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## Mechanical Specifications

<b>Connector Retention Tensile Force</b>	200.17 N   45 lbf
<b>Connector Retention Torque</b>	2.7 N-m   23.897 in lb
<b>Coupling Nut Proof Torque</b>	8 N-m   70.806 in lb
<b>Coupling Nut Retention Force</b>	449.98 N   101.16 lbf
<b>Interface Durability</b>	100 cycles
<b>Mechanical Shock Test Method</b>	IEC 60068-2-27

## Environmental Specifications

<b>Operating Temperature</b>	-55 °C to +85 °C (-67 °F to +185 °F)
<b>Storage Temperature</b>	-65 °C to +125 °C (-85 °F to +257 °F)
<b>Attenuation, Ambient Temperature</b>	20 °C   68 °F
<b>Average Power, Ambient Temperature</b>	40 °C   104 °F
<b>Corrosion Test Method</b>	IEC 60068-2-11
<b>Immersion Depth</b>	1 m
<b>Immersion Test Mating</b>	Mated
<b>Immersion Test Method</b>	IEC 60529:2001, IP68
<b>Moisture Resistance Test Method</b>	IEC 60068-2-3
<b>Thermal Shock Test Method</b>	IEC 60068-2-14
<b>Vibration Test Method</b>	IEC 60068-2-6

## Packaging and Weights

<b>Weight, net</b>	25.45 g   0.056 lb
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## Regulatory Compliance/Certifications

<b>Agency</b>	<b>Classification</b>
CHINA-ROHS	Below maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
REACH-SVHC	Compliant as per SVHC revision on <a href="http://www.andrew.com/ProductCompliance">www.andrew.com/ProductCompliance</a>
ROHS	Compliant
UK-ROHS	Compliant



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## \* Footnotes

**Insertion Loss Coefficient, typical**  $0.05\sqrt{\text{freq (GHz)}}$  (not applicable for elliptical waveguide)

**Immersion Depth** Immersion at specified depth for 24 hours