

# LMR<sup>®</sup>-100A Flexible Low Loss Communications Coax

Ideal for...

- Drop-in Replacement for RG-316/RG-174 (uses standard connectors)
- Jumper Assemblies in Wireless Communications Systems
- Short Antenna Feeder runs
- Any application (e.g. WLL, GPS, LMR, WLAN, WiSP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable



- **LMR<sup>®</sup>-PVC** is designed for low loss general-purpose indoor/outdoor applications and is somewhat more flexible than the standard polyethylene jacketed LMR.
- **LMR<sup>®</sup>-PVC-W** is a white-jacketed version of LMR-PVC for marine and other indoor/outdoor applications where color compatibility is desired.

• **Flexibility** and bendability are hallmarks of the LMR-100A cable design. The flexible outer conductor enables the tightest bend radius available for any cable of similar size and performance.

• **Low Loss** is another hallmark feature of LMR-100A. Size for size LMR has the lowest loss of any flexible cable and comparable loss to semirigid hard-line cables.

• **RF Shielding** is 50 dB greater than typical single shielded coax (40 dB). The multi-ply bonded foil outer conductor is rated conservatively at > 90 dB (i.e. >180 dB between two adjacent cables).

• **Weatherability:** LMR-100A cables designed for outdoor exposure incorporate the best materials for UV resistance and have life expectancy in excess of 20 years.

• **Connectors:** A wide variety of connectors are available for LMR-100A cable, including all common interface types, reverse polarity, and a choice of solder or non-solder center pins. Most LMR connectors employ crimp outer attachment using standard hex crimp sizes.

• **Cable Assemblies:** All LMR-100A cable types are available as pre-terminated cable assemblies. Refer to the section on FlexTech for further details.

Construction Specifications			
Description	Material	In.	(mm)
Inner Conductor	Solid BCCS	0.018	(0.46)
Dielectric	Solid PE	0.060	(1.52)
Outer Conductor	Aluminum Tape	0.065	(1.65)
Overall Braid	Tinned Copper	0.083	(2.11)
Jacket	(see table above)	0.110	(2.79)

Mechanical Specifications			
Performance Property	Units	US	(metric)
Bend Radius: installation	in. (mm)	0.25	(6.4)
Bend Radius: repeated	in. (mm)	1	(25.4)
Bending Moment	ft-lb (N-m)	0.1	(0.014)
Weight	lb/ft (kg/m)	0.0092	(.014)
Tensile Strength	lb (kg)	15	(6.8)
Flat Plate Crush	lb/in. (kg/mm)	10	(0.18)

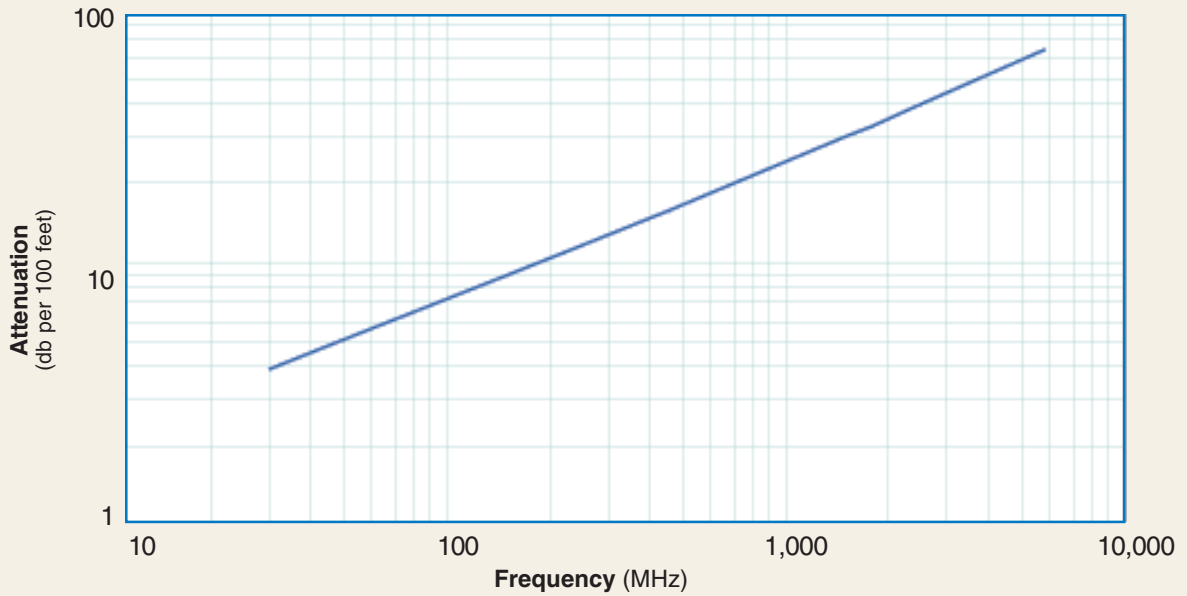
Environmental Specifications		
Performance Property	°F	°C
Installation Temperature Range	-40/+185	-40/+85
Storage Temperature Range	-94/+185	-70/+85
Operating Temperature Range	-40/+185	-40/+85

Electrical Specifications			
Performance Property	Units	US	(metric)
Cutoff Frequency	GHz	63	
Velocity of Propagation	%	66	
Dielectric Constant	NA	2.30	
Time Delay	nS/ft (nS/m)	1.54	(5.05)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	30.8	(101.1)
Inductance	uH/ft (uH/m)	0.077	(0.25)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	81.0	(266)
Outer Conductor	ohms/1000ft (/km)	9.5	(31.2)
Voltage Withstand	Volts DC	500	
Jacket Spark	Volts RMS	2000	
Peak Power	kW	0.6	

Part Description					Stock
Part Number	Application	Jacket	Color	Code	
LMR-100A-FR	Indoor-Riser CMR	FRPE	Black	54037	
LMR-100A-PVC	Indoor/Outdoor	PVC	Black	54119	
LMR-100A-PVC-W	Indoor/Outdoor	PVC	White	54200	

PVC = Poly Vinyl Chloride; MTO = Made to Order

Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800
Attenuation dB/100 ft	3.9	5.1	8.9	10.9	15.8	22.8	30.1	33.2	35.2	39.8	64.1
Attenuation dB/100 m	12.9	16.7	29.4	35.8	51.9	74.9	98.7	109.0	115.5	130.6	210.3
Avg. Power kW	0.230	0.180	0.100	0.083	0.057	0.039	0.029	0.027	0.025	0.022	0.013

Calculate Attenuation =  $(0.709140) \cdot \sqrt{FMHz} + (0.001740) \cdot FMHz$  (interactive calculator available at <http://www.timesmicrowave/telecom>)  
 Attenuation: VSWR=1.0; Ambient = +25°C (77°F) Power: VSWR=1.0; Ambient = +40°C; Inner Conductor = 100°C (212°F);  
 Sea Level; dry air; atmospheric pressure; no solar loading



Connectors

Interface	Description	Part Number	Stock Code	VSWR ** Freq. (GHz)	Coupling Nut	Inner Contact Attach	Outer Contact Attach	Finish* Body /Pin	Length in	Width (mm)	Width in (mm)	Weight lb	Weight (g)
SMA male	Straight Plug	TC-100-SM	3190-1551	<1.25:1 (<3)	Hex	Solder	Crimp	SS/G	1.0	(25.4)	0.32 (8.1)	0.015	(6.8)
TNC male	Straight Plug	TC-100-TM	3190-1552	<1.25:1 (<3)	Knurl	Solder	Crimp	S/G	1.4	(35.6)	0.59 (15.0)	0.045	(20.4)

\* Finish metals: N=Nickel, S=Silver, G=Gold, SS=Stainless Steel, A=Alballoy \*\*VSWR spec based on 3 foot cable with a connector pair



Install Tools

Type	Part Number	Stock Code	Description
Crimp Tool	CT-240/200/195/100	3190-667	Crimp tool for LMR-100, 195, 200 and 240 connectors
Cutting Tool	CCT-01	3190-1544	Cable end flush cut tool
Replacement Blade	RB-01	3190-1609	Replacement blade for cutting tool





### HIGH GAIN OMNI-DIRECTIONAL COLLINEAR ANTENNA

The Laird Technologies S2406BFNM, adds a direct fixed N-male connectorized version to the suite of high performance omni-directional collinear antennas. The fixed N-male connector allows users to mount the antenna directly to any access point or NEMA enclosure that is connectorized with an N female connector.

The S2406BFNM incorporates all of the performance features, adherence to specification and product consistency that the industry has come to appreciate in Laird Technologies antennas.

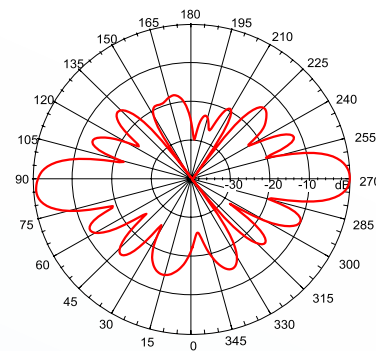
### FEATURES

- Direct access point mounting
- High gain-to-size ratio value
- Rugged UV stable, weather resistant radome

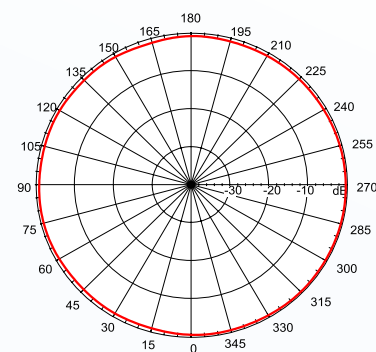
### APPLICATIONS

- Metropolitan mesh networks
- High to medium density customer premise location

PARAMETER	SPECIFICATIONS
Part Number	S2406BFNM
Frequency (MHz)	2400 - 2500 MHz
Gain (dBi)	8 dBi (nominal)
Maximum VSWR	1.7:1
E-Plane (-3 dB beamwidth)	14°
H-Plane (-3 dB beamwidth)	Omni-directional
Polarization	Vertical linear
Input Impedance (Ohms)	50
Maximum Input Power (Watts)	50
Connector Type (M)	Type fixed N
Dimensions in.(cm)	19.5 x.75 (495 x19)
Weight lb. (kg)	0.45 (.20)
Orientation	Upright or inverted
Radome	UV stable fiberglass
Mount Style	Direct / Pole



**E- PLANE 2.45 GHz**



**H PLANE 2 45 GHz**

### global solutions: local support.™

Americas: +1.847.839.6907  
IAS-AmericasEastSales@lairdtech.com

Europe: +1.32.80.7866.12  
IAS-EUSales@lairdtech.com

Asia: +1.65.6.243.8022  
IAS-AsiaSales@lairdtech.com

[www.lairdtech.com](http://www.lairdtech.com)

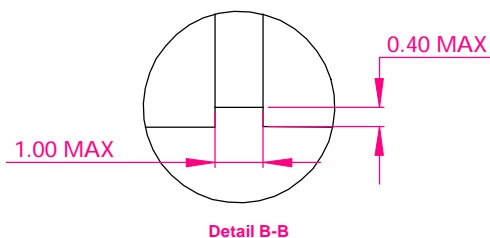
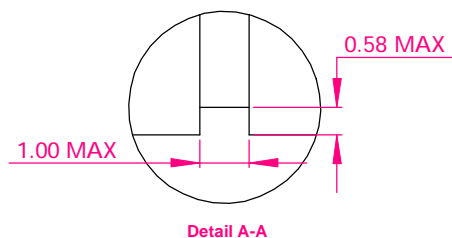
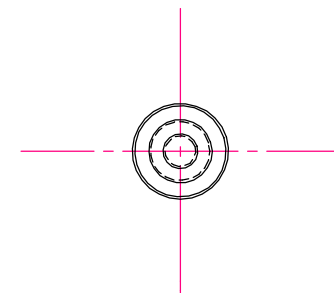
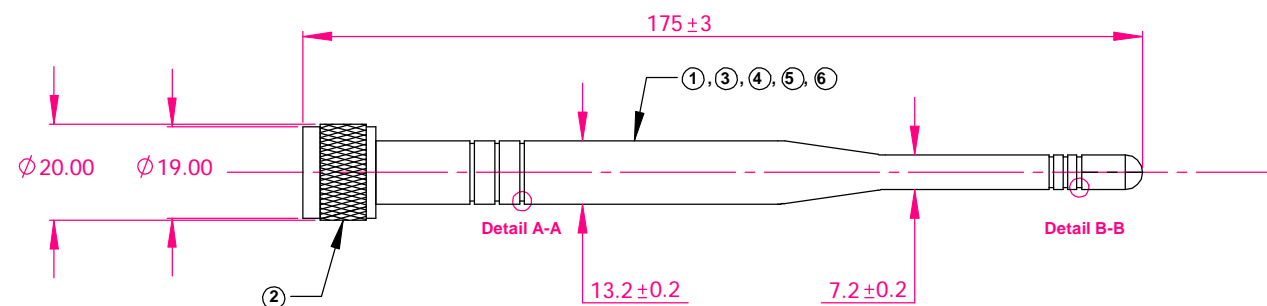
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BILL OF MATERIAL			
ITEM	NAME	MATERIAL	QTY
①	Radome	TPEE 55D, Color: Black	1PC
②	Connector	N-TYPE Plug, Brass, Plated Black Chrome	1SET
③	Copper Tube	Brass	1PC
④	Spring	Phosphor Bronze	1PC
⑤	Cable	RG178 Coaxial Cable	1PC
⑥	Heat Shrink Tube	Heat Shrink Tube, Black	1PC

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	DRAWN BY
All	A	Antenna, 2.4-2.5 GHz, Black, N-Male	10/7/2008	BPH



- NOTES:**
- Frequency range: 2.4-2.5GHz
  - VSWR:  $\leq 2.0$
  - Gain: TYP 5.0 dBi
  - Connector: N Plug
  - Color: Black
  - Operating temperature range: -30°C To 70 °C
  - All materials are ROHS compliant

<b>MATERIAL:</b> Refer to Bill of Materials		THIRD ANGLE PROJECTION 		<b>Laird TECHNOLOGIES</b> 1751 WILKINING COURT SCHAUMBURG, IL 60173 USA	
<b>FINISH:</b> Refer to Bill of Materials		DO NOT SCALE DRAWING		<b>TITLE:</b> Antenna, 2.4-2.5 GHz, Black, N-Male	
<b>APPROVALS</b>		<b>DATE</b>		INTERPRET DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994	
DESIGN BY:				TOLERANCES UNLESS OTHERWISE SPECIFIED	
CHECKED BY:				DIMENSIONS ARE IN MILLIMETERS	
ENG MGR:				ANGLE: ±30' 0 PLACE DECIMAL: ±0.5 1 PLACE DECIMAL: ±0.25 2 PLACE DECIMAL: ±0.13	
PRODUCTION:				<b>SIZE</b> A2	<b>DWG. NO.</b> N24-5-NM-B
PURCHASING:				<b>SCALE:</b>	<b>REV</b> A
				PREVIOUS#	SHEET 1 OF 1

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