

# VENTILATION DES COÛTS

## ANNEXE 1

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Pêches et Océans Canada  
Garde côtière canadienne

**FABRICATION ET INSTALLATION D'UN  
PYLÔNE HAUBANÉ DE 61,0m AVEC  
TRAVAUX CONNEXES**

Ventilation des coûts  
ANNEXE 1

**Notre-Dame-du-Portage**

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***L'ENTREPRENEUR DOIT UTILISER LA VENTILATION DES COÛTS DANS LES DOCUMENTS CONTRACTUELS POUR DÉPOSER SA SOUMISSION.***

# **MATÉRIEL FOURNI PAR LA GCC**

## **ANNEXE 2**

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*Voici la liste détaillée des matériaux et équipements que la GCC fournira pour les travaux à réaliser à Notre-Dame-du-Portage. La GCC ne fournira aucun autre matériel ou équipement autre que ceux ci-après énumérés peu importe qu'une autre clause du devis ou sur les plans laisse entendre quelque chose d'autre. Le matériel suivant sera préalablement vérifié par la GCC et fourni à l'Entrepreneur :*

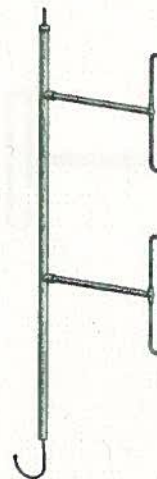
1. Quatre (4) antennes VHF de type Comprod 874-70HDWBSM et leur câble de type AVA5-50 + connecteurs RF requis.
2. Récupérer l'antenne VHF-DF au sommet. GCC fournira le câble coaxial et le câble de contrôle
3. Récupérer les six antennes sur le toit de l'abri. Cinq d'entre elles devront être relocalisées temporairement sur l'un des mâts GPS durant les travaux du pare-glace. Ensuite, les fixer sur le pare-glace sans percement. GCC fournira les câbles qui seront acheminés vers la nouvelle entrée de câbles aériennes via le toit.
  - a. Deux antennes AIS Furuno GPA-017S avec câble LMR-240 avec connecteurs requis
  - b. Deux antennes MF Beacon Starlink MBA-1 avec câble RG-214 avec connecteurs requis
  - c. 1 antenne Yagi avec câble RG-214 avec connecteur requis
  - d. 1 antenne GPS sera à désinstaller et à remettre à la GCC
4. La GCC fournira les quatre (4) câbles LDF4-50A qui relient les antenne GPS dans les mâts no 1 et no 2 avec connecteurs RF requis. Ces câbles sont à remplacer car leur course doit être modifiée pour entrer dans l'abri via une tranchée puis la nouvelle étagère à câble aérienne.
5. GCC fournira les deux plaques de cuivre pour l'entrée de câbles



### CP870 Series VHF Exposed Dipoles

The 870 Series VHF Exposed Dipoles are available in 1, 2, 4, 8, dipole and dual dipole configurations. All of our antennas can be completely customized to your particular applications. Our antennas can be Black Anodized, Adjustable or Fixed, Side Mount or Top Mount, and many version of Heavy Duty Ruggedness.

- Each antenna is offered in a 1/4, 3/8, or 1/2 wave versions.
- The 87XA-70 has an external cabling and has a field adjustable pattern.
- The 87XF-70 has an internal cabling and fixed dipole-mast spacing.
- Heavy Duty Versions are available, but please contact a Comprod Technical support technician for consultation.

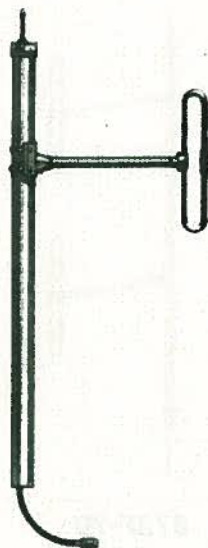


**872F-70**

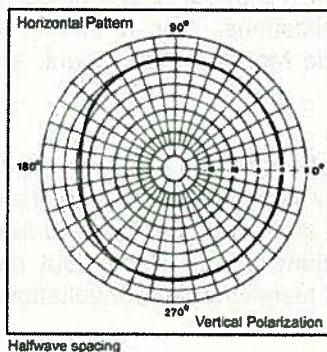
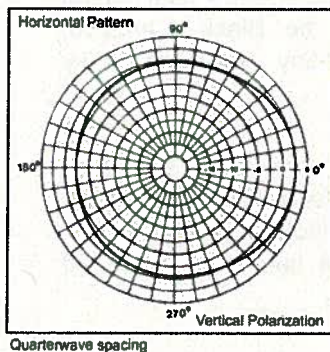
Electrical Specifications	871F-70	872F-70	874F-70
Frequency Range, MHz	138-174	138-174	138-174
Nominal Gain, dBd	2.0-2.5	5.0-5.5	8.0-8.5
Number of Dipoles	1	2	4
Bandwidth: 1.5:1 VSWR, MHz	36	36	36
Polarization	Vertical	Vertical	Vertical
Pattern	Offset	Offset	Offset
Power Rating, Watts	200	450	450
Nominal Impedance, Ohms	50	50	50
Lightning Protection	DC Ground	DC Ground	DC Ground
Standard Termination	Type N Male	Type N Male	Type N Male
Mechanical Specifications			
Length, in (mm)	78 (1981)	126 (3200)	246 (6248)
Width (1/2 Wave Spacing), in (mm)	40 (1016)	40 (1016)	40 (1016)
Weight, lbs (kg)	11.8 (5.4)	24 (10.8)	67 (30)
Rated Wind Velocity: No Ice, mph (km/h)	170 (241)	150 (241)	145 (233)
Rated Wind Velocity: 0.5" (13mm) Ice, mph (km/h)	145 (217)	135 (217)	95 (153)
Lateral Thrust @ 100mph wind lbs (kg)	45 (20.5)	92 (41.7)	160 (72.6)
Bending Moment @ top clamp: 100mph, lb*ft (kg*m)	18 (2.5)	205 (28.4)	1364 (188.7)
Projected Area ft <sup>2</sup> (m <sup>2</sup> )	1.7 (0.16)	3.5 (0.33)	7 (0.65)
Mounting Information	Mast 1.9" (48mm) O.D.	Mast 2.4" (61mm) O.D.	Mast 2.9" (61mm) O.D.

Order Information	Adjustable	Heavy Duty	Side Mount	Top Mount	Black Anodized
871-70	871A-70	871F-70HD	871F-70SM	871F-70TM	871F-70HDB
872-70	872A-70	872F-70HD	872F-70SM	872F-70TM	872F-70HDB
874-70	874A-70	874F-70HD	874F-70SM	874F-70TM	874F-70HDB

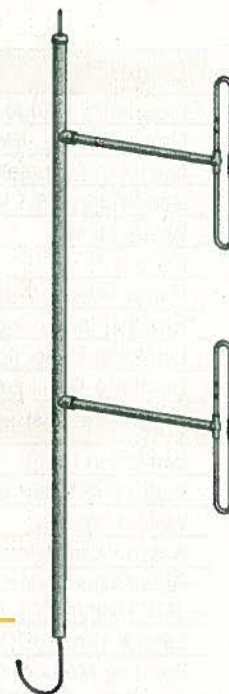
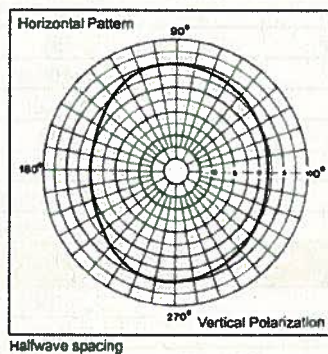
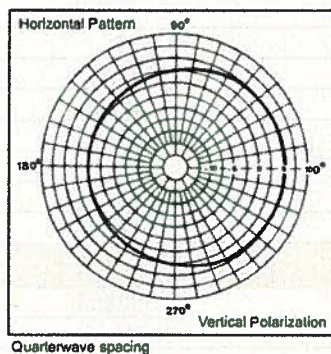




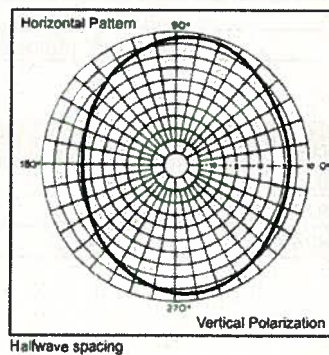
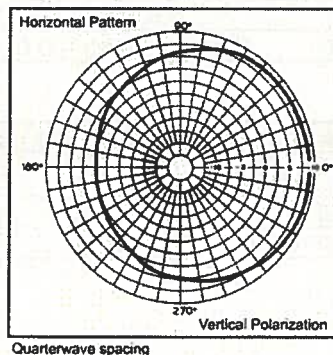
871F-70



874F-70



872F-70



# Product Specifications

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## LDF4-50A

**LDF4-50A, HELIAX® Low Density Foam Coaxial Cable, corrugated copper, 1/2 in, black PE jacket**

### Construction Materials

Jacket Material	PE
Outer Conductor Material	Corrugated copper
Dielectric Material	Foam PE
Flexibility	Standard
Inner Conductor Material	Copper-clad aluminum wire
Jacket Color	Black

### Dimensions

Nominal Size	1/2 in
Cable Weight	0.15 lb/ft   0.22 kg/m
Diameter Over Dielectric	12.954 mm   0.510 in
Diameter Over Jacket	15.875 mm   0.625 in
Inner Conductor OD	4.8260 mm   0.1900 in
Outer Conductor OD	13.970 mm   0.550 in

### Electrical Specifications

Cable Impedance	50 ohm $\pm$ 1 ohm
Capacitance	23.1 pF/ft   75.8 pF/m
dc Resistance, Inner Conductor	0.450 ohms/kft   1.480 ohms/km
dc Resistance, Outer Conductor	0.820 ohms/kft   2.690 ohms/km
dc Test Voltage	4000 V
Inductance	0.190 $\mu$ H/m   0.058 $\mu$ H/ft
Insulation Resistance	100000 Mohms•km
Jacket Spark Test Voltage (rms)	8000 V
Operating Frequency Band	1 – 8800 MHz
Peak Power	40.0 kW
Velocity	88%

### Environmental Specifications

Installation Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Operating Temperature	-55 °C to +85 °C (-67 °F to +185 °F)
Storage Temperature	-70 °C to +85 °C (-94 °F to +185 °F)

### General Specifications

Brand	HELIAX®
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### Mechanical Specifications

Bending Moment	3.8 N-m   2.8 ft lb
Flat Plate Crush Strength	110.0 lb/in   2.0 kg/mm
Minimum Bend Radius, Multiple Bends	127.00 mm   5.00 in



# Product Specifications

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Minimum Bend Radius, Single Bend	50.80 mm   2.00 in
Number of Bends, minimum	15
Number of Bends, typical	50
Tensile Strength	113 kg   250 lb

## Note

Performance Note Values typical, unless otherwise stated

## Standard Conditions

Attenuation, Ambient Temperature	20 °C   68 °F
Average Power, Ambient Temperature	40 °C   104 °F
Average Power, Inner Conductor Temperature	100 °C   212 °F

## Return Loss/VSWR

Frequency Band	VSWR	Return Loss (dB)
680–800 MHz	1.13	24.30
800–960 MHz	1.13	24.30
1700–2200 MHz	1.13	24.30
2300–2700 MHz	1.13	24.30

## Attenuation

Frequency (MHz)	Attenuation (dB/100 m)	Attenuation (dB/100 ft)	Average Power (kW)
0.5	0.149	0.045	40.00
1	0.211	0.064	36.11
1.5	0.259	0.079	29.46
2	0.299	0.091	25.50
10	0.672	0.205	11.35
20	0.954	0.291	7.99
30	1.172	0.357	6.51
50	1.521	0.463	5.02
88	2.031	0.619	3.76
100	2.169	0.661	3.52
108	2.256	0.688	3.38
150	2.673	0.815	2.85
174	2.887	0.88	2.64
200	3.103	0.946	2.46
300	3.835	1.169	1.99
400	4.462	1.36	1.71
450	4.749	1.447	1.61
500	5.021	1.53	1.52
512	5.085	1.55	1.50
600	5.533	1.686	1.38
700	6.009	1.831	1.27
800	6.456	1.968	1.18
824	6.56	1.999	1.16
894	6.855	2.089	1.11
960	7.124	2.171	1.07
1000	7.284	2.22	1.05
1250	8.226	2.507	0.93
1500	9.093	2.771	0.84

# Product Specifications

COMMScope®

LDF4-50A

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1700	9.744	2.97	0.78
1800	10.058	3.066	0.76
2000	10.666	3.251	0.72
2100	10.961	3.341	0.70
2200	11.251	3.429	0.68
2300	11.535	3.516	0.66
2500	12.09	3.685	0.63
2700	12.627	3.849	0.60
3000	13.407	4.086	0.57
3400	14.401	4.389	0.53
3700	15.118	4.608	0.50
4000	15.815	4.82	0.48
5000	18.01	5.489	0.42
6000	20.055	6.113	0.38
8000	23.826	7.262	0.32
8800	25.244	7.694	0.30

\* Values typical, guaranteed within 5%

## Regulatory Compliance/Certifications

### Agency

RoHS 2011/65/EU

China RoHS SJ/T 11364-2006

ISO 9001:2008

### Classification

Compliant

Below Maximum Concentration Value (MCV)

Designed, manufactured and/or distributed under this quality management system





# Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION



8268 Coax - 50 Ohm Coax

For more Information  
please call

1-800-Belden1



## General Description:

13 AWG stranded (7x21) .089" silver-plated copper conductor, polyethylene insulation, double silver-plated copper braid shield (95% coverage), non-contaminating PVC jacket.

## Physical Characteristics (Overall)

### Conductor

#### AWG:

# Coax	AWG	Stranding	Conductor Material	Dia. (in.)
1	13	7x21	SPC - Silver Plated Copper	.089

Total Number of Conductors:

1

### Insulation

#### Insulation Material:

Insulation Material	Dia. (in.)
PE - Polyethylene	.285

### Outer Shield

#### Outer Shield Material:

Layer #	Type	Outer Shield Material	Coverage (%)
1	Braid	SPC - Silver Plated Copper	95.000
2	Braid	SPC - Silver Plated Copper	95.000

### Outer Jacket

#### Outer Jacket Material:

Outer Jacket Material
PVCNC - Polyvinyl Chloride Non-Contaminating

### Overall Cable

Overall Nominal Diameter:

0.425 in.

## Mechanical Characteristics (Overall)

Operating Temperature Range: -40°C To +80°C

UL Temperature Rating: 60°C

Bulk Cable Weight: 131 lbs/1000 ft.

Max. Recommended Pulling Tension: 225 lbs.

Min. Bend Radius/Minor Axis: 6 in.

## Applicable Specifications and Agency Compliance (Overall)

### Applicable Standards & Environmental Programs

NEC(UL) Specification:	CMX
CEC/C(UL) Specification:	CMX
AWM Specification:	UL Style 1354
EU Directive 2011/65/EU (ROHS II):	Yes
EU CE Mark:	No
EU Directive 2000/53/EC (ELV):	Yes
EU Directive 2002/95/EC (RoHS):	Yes
EU RoHS Compliance Date (mm/dd/yyyy):	10/01/2005
EU Directive 2002/96/EC (WEEE):	Yes
EU Directive 2003/11/EC (BFR):	Yes
CA Prop 65 (CJ for Wire & Cable):	Yes
MIL Order #39 (China RoHS):	Yes
Military Specification:	MIL-C-17, M17/075



# Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION



8268 Coax - 50 Ohm Coax

RG Type: 214/U

## Flame Test

UL Flame Test: VW-1

## Plenum/Non-Plenum

Plenum (Y/N): No

## Electrical Characteristics (Overall)

### Nom. Characteristic Impedance:

Impedance (Ohm)  
50

### Nom. Inductance:

Inductance (µH/ft)  
.077

### Nom. Capacitance Conductor to Shield:

Capacitance (pF/ft)  
30.8

### Nominal Velocity of Propagation:

VP (%)  
68

### Nominal Delay:

Delay (ns/ft)  
1.54

### Nom. Conductor DC Resistance:

DCR @ 20°C (Ohm/1000 ft)  
1.7

### Nominal Outer Shield DC Resistance:

DCR @ 20°C (Ohm/1000 ft)  
0.7

### Nom. Attenuation:

Freq. (MHz)	Attenuation (dB/100 ft.)
1	.17
10	.55
50	1.3
100	1.9
200	2.7
400	4.1
700	6.5
900	7.6
1000	8.0
4000	20.0

### Max. Power Rating:

Freq. (MHz)	Rating (W)
50	1500
100	907
200	549
400	332
700	221
900	184
1000	171
4000	62

### Max. Operating Voltage - UL:

Voltage	Description
30 V RMS	UL AWM Style 1354
300 V RMS	NEC

### Max. Operating Voltage - Non-UL:

Voltage  
3700 V RMS (MIL-Spec.)

## Notes (Overall)

Notes: Non-SWR swept version of RG-214

## Put Ups and Colors:

# Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION



## 8268 Coax - 50 Ohm Coax

Item #	Putup	Ship Weight	Color	Notes	Item Desc
8268 0101000	1,000 FT	140.000 LB	BLACK	C	M17/164-00001 COAX
8268 010500	500 FT	70.500 LB	BLACK	C	M17/164-00001 COAX

**Notes:**

C = CRATE REEL PUT-UP.

Revision Number: 3    Revision Date: 07-29-2013

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## AVA5-50

**AVA5-50, HELIAX® Andrew Virtual Air™ Coaxial Cable, corrugated copper, 7/8 in, black PE jacket**

### **OBSOLETE**

Replaced By

AVA5-50FX

AVA5-50FX, HELIAX® Andrew Virtual Air™ Coaxial Cable, corrugated copper, 7/8 in, black PE jacket

## Construction Materials

Jacket Material	PE
Outer Conductor Material	Corrugated copper
Dielectric Material	Foam PE
Flexibility	Standard
Inner Conductor Material	Copper tube
Jacket Color	Black

## Dimensions

Nominal Size	7/8 in
Cable Weight	0.30 lb/ft   0.45 kg/m
Diameter Over Dielectric	24.130 mm   0.950 in
Diameter Over Jacket	27.991 mm   1.102 in
Inner Conductor OD	9.4488 mm   0.3720 in
Outer Conductor OD	25.400 mm   1.000 in

## Electrical Specifications

Cable Impedance	50 ohm $\pm$ 1 ohm
Capacitance	22.0 pF/ft   73.0 pF/m
dc Resistance, Inner Conductor	0.410 ohms/kft   1.435 ohms/km
dc Resistance, Outer Conductor	0.340 ohms/kft   1.116 ohms/km
dc Test Voltage	6000 V
Inductance	0.184 $\mu$ H/m   0.056 $\mu$ H/ft
Insulation Resistance	100000 Mohms•km
Jacket Spark Test Voltage (rms)	8000 V
Operating Frequency Band	1 – 5000 MHz
Peak Power	91.0 kW
Velocity	91%

## Environmental Specifications

Installation Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
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# Product Specifications

COMMScope®

AVA5-50

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Operating Temperature	-55 °C to +85 °C (-67 °F to +185 °F)
Storage Temperature	-70 °C to +85 °C (-94 °F to +185 °F)

## General Specifications

Brand	HELIAX®
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## Mechanical Specifications

Bending Moment	19.0 N-m   14.0 ft lb
Flat Plate Crush Strength	75.0 lb/in
Minimum Bend Radius, Multiple Bends	254.00 mm   10.00 in
Minimum Bend Radius, Single Bend	127.00 mm   5.00 in
Number of Bends, minimum	15
Number of Bends, typical	30
Tensile Strength	159 kg   350 lb

## Note

Performance Note	Values typical, unless otherwise stated
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## Standard Conditions

Attenuation, Ambient Temperature	20 °C   68 °F
Average Power, Ambient Temperature	40 °C   104 °F
Average Power, Inner Conductor Temperature	100 °C   212 °F

## Return Loss/VSWR

Frequency Band	VSWR	Return Loss (dB)
806-960 MHz	1.13	24.30
1700-2170 MHz	1.13	24.30

## Attenuation

Frequency (MHz)	Attenuation (dB/100 m)	Attenuation (dB/100 ft)	Average Power (kW)
0.5	0.08	0.024	91.00
1	0.113	0.034	74.43
1.5	0.138	0.042	60.73
2	0.16	0.049	52.56
10	0.359	0.11	23.37
20	0.51	0.156	16.46
30	0.627	0.191	13.39
50	0.814	0.248	10.32
88	1.088	0.332	7.72
100	1.162	0.354	7.23
108	1.209	0.368	6.95
150	1.433	0.437	5.86
174	1.548	0.472	5.43
200	1.665	0.507	5.05
300	2.059	0.628	4.08
400	2.398	0.731	3.50

# Product Specifications

COMMScope®

AVA5-50

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450	2.553	0.778	3.29
500	2.7	0.823	3.11
512	2.735	0.834	3.07
600	2.977	0.907	2.82
700	3.235	0.986	2.60
800	3.478	1.06	2.42
824	3.534	1.077	2.38
894	3.694	1.126	2.27
960	3.841	1.171	2.19
1000	3.927	1.197	2.14
1250	4.44	1.353	1.89
1500	4.912	1.497	1.71
1700	5.268	1.606	1.59
1800	5.439	1.658	1.54
2000	5.771	1.759	1.46
2100	5.933	1.808	1.42
2200	6.091	1.856	1.38
2300	6.247	1.904	1.34
2500	6.551	1.996	1.28
2700	6.845	2.086	1.23
3000	7.273	2.217	1.15
3400	7.819	2.383	1.07
3700	8.213	2.503	1.02
4000	8.596	2.62	0.98
5000	9.807	2.989	0.86

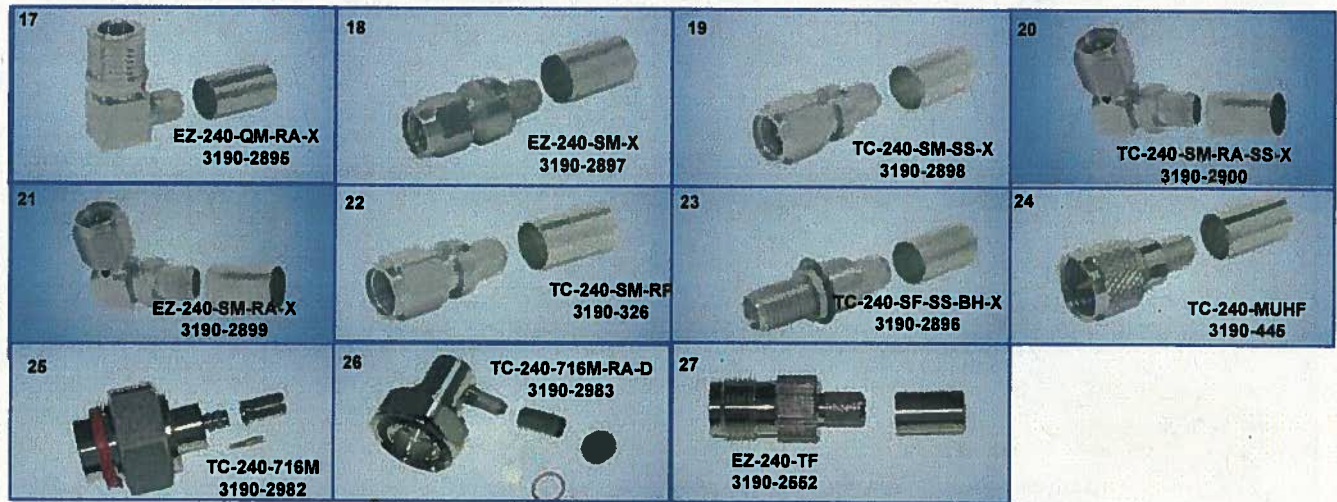
\* Values typical, guaranteed within 5%

## Regulatory Compliance/Certifications

Agency	Classification
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system







## Hardware Accessories

Type	Part Number	Stock Code	Description
Ground Kit	GK-S240TT	GK-S240TT	Standard Ground Kit (each)



## 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
Strip Tool	CST-240A	3192-152	Prep tool for LMR-240 connectors
Deburr Tool	DBT-U	3192-001	Removes center conductor rough edges
Cutting Tool	CCT-01	3190-1644	Cable end flush cut tool
Replacement Blade	RB-01	3190-1609	Replacement blade for cutting tool
Replacement Blade Kit	RB-CST	3192-086	Replacement blade kit for all CST strip tools



# LMR®-240

## Flexible Low Loss Communications Coax



### Connectors

Interface	Description	Part Number	Stock Code	VSWR** Freq. (GHz)	Coupling Nut	Inner Contact Attach	Outer Contact Attach	Finish* Body /Pin	Length in (mm)	Width in (mm)	Weight lb (g)
1. F Male	Straight Plug	TC-240-FM-X	3190-2891	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	1.1 (28)	0.45 (11.4)	0.014 (6.4)
2. N Male	Straight Plug	EZ-240-NMH-X	3190-2893	<1.25:1 (2.5)	Hex/Knurl	Spring Finger	Crimp	A/G	1.5 (38.1)	0.78 (19.8)	0.086 (39.0)
3. N Male	Right Angle	TC-240-NMH-RA-D	3190-2426	<1.35:1 (6)	Hex/Knurl	Solder	Crimp	A/G	1.2 (32.4)	1.22 (31.0)	0.091 (41.7)
4. N Male	Straight Plug	TC-240-NMH-X	3190-2887	<1.25:1 (2.5)	Hex/Knurl	Solder	Crimp	N/S	1.5 (38)	0.75 (19.1)	0.086 (39.0)
5. N Male	Straight Plug	TC-240-NMC	3190-244	<1.25:1 (2.5)	Knurl	Solder	Clamp	S/G	1.5 (38)	0.75 (19.1)	0.082 (37.2)
6. 1.0/2.3 DIN	Straight Plug	EZ-240-1023M	3190-2512	<1.35:1 (2.5)	knurl	Spring Finger	Crimp	N/G	1.1 (28.5)	0.33 (8.5)	0.014 (6.63)
7. N Female	Bulkhead Jack	TC-240-NF-BH-X	3190-2888	<1.25:1 (2.5)	NA	Solder	Crimp	A/G	1.7 (44)	0.88 (22.2)	0.115 (52.2)
8. N Female	Panel Mount	TC-240-NF-PM-X	3190-2889	<1.25:1 (6)	NA	Solder	Crimp	A/G	1.7 (44)	0.88 (22.2)	0.115 (52.2)
9. BNC Male	Straight Plug	TC-240-BMC	3190-242	<1.25:1 (2.5)	Knurl	Solder	Clamp	S/G	1.7 (43)	0.56 (14.2)	0.040 (18.1)
10. BNC Male	Straight Plug	TC-240-BM-X	3190-2890	<1.25:1 (2.5)	Knurl	Solder	Crimp	A/G	1.3 (34)	0.58 (14.7)	0.043 (19.5)
11. BNC Male	Straight Plug	TC-240-BM-RA-D	3190-2869	<1.25:1 (2)	Knurl	Solder	Crimp	A/G	1.0 (25.1)	0.57 (14.5)	0.115 (52.0)
12. TNC Male	Straight Plug	EZ-240-TM-X	3190-2725	<1.25:1 (2.5)	Knurl	Spring Finger	Crimp	N/G	1.4 (34.3)	0.59 (15.0)	0.043 (19.5)
13. TNC Male	Straight Plug	TC-240-TM-X	3190-2797	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	1.7 (43)	0.59 (15.0)	0.043 (19.5)
14. TNC Male	Reverse Polarity	EZ-240-TM-RP-X	3190-2892	<1.25:1 (8)	Knurl	Spring Finger	Crimp	A/G	1.4 (36)	0.59 (15.0)	0.043 (19.5)
15. TNC Male	Right Angle	TC-240-TM-RA-D	3190-2798	<1.25:1 (6)	Hex	Solder	Crimp	A/G	1.0 (25.1)	0.62 (15.7)	0.115 (52.0)
16. QMA Male	Straight Plug	EZ-240-QM-X	3190-2894	<1.25:1 (6)	Knurl	Spring Finger	Crimp	N/G	1.2 (30.0)	0.41 (10.5)	0.014 (6.35)
17. QMA Male	Right Angle	EZ-240-QM-RA-X	3190-2895	<1.25:1 (<6)	Knurl	Spring Finger	Crimp	N/G	0.8 (20.3)	0.65 (18.5)	0.019 (8.82)
18. SMA Male	Straight Plug	EZ-240-SM-X	3190-2897	<1.25:1 (6)	Hex	Spring Finger	Crimp	N/G	1.0 (25.4)	0.32 (8.1)	0.018 (7.26)
19. SMA Male	Straight Plug	TC-240-SM-SS-X	3190-2898*	<1.25:1 (10)	Hex	Solder	Crimp	SS/G	1.0 (25)	0.32 (8.1)	0.016 (7.3)
20. SMA Male	Right Angle	TC-240-SM-RA-SS-X	3190-2900*	<1.35:1 (6)	Hex	Solder	Crimp	SS/G	0.8 (20)	0.65 (16.5)	0.019 (8.6)
21. SMA Male	Right Angle	EZ-240-SM-RA-X	3190-2899	<1.25:1 (6)	Hex	Spring Finger	Crimp	A/G	0.9 (22.8)	0.31 (7.9)	0.019 (8.6)
22. SMA Male	Reverse Polarity	TC-240-SM-RP	3190-326	<1.25:1 (2.5)	Hex	Solder	Crimp	SS/G	1.0 (25)	0.32 (8.1)	0.016 (7.3)
23. SMA Female	Bulkhead Jack	TC-240-SF-SS-BH-X	3190-2898*	<1.25:1 (2.5)	NA	Solder	Crimp	SS/G	1.1 (29)	0.31 (7.9)	0.019 (8.8)
24. Mini-UHF	Straight Plug	TC-240-MUHF	3190-445	<1.25:1 (2.5)	Knurl	Solder	Crimp	N/G	1.1 (28)	0.45 (11.4)	0.014 (6.4)
25. 7/16 Din Male	Straight Plug	TC-240-716M	3190-2982	<1.35:1 (3)	Hex	Spring Finger	Crimp	A/S	2.0 (50.5)	1.28 (32.0)	0.188 (84.4)
26. 7/16 Din Male	Right Angle	TC-240-716M-RA-D	3190-2983	<1.35:1 (3)	Hex	Solder	Crimp	A/S	1.4 (34.3)	1.60 (40.6)	0.239 (108.5)
27. TNC Female	Straight Jack	EZ-240-TF	3190-2552	<1.35:1 (6)	NA	Spring Finger	Crimp	N/G	1.1 (27.0)	0.45 (11.4)	0.035 (15.9)



### Mechanical Specifications

Performance Property	Units	US	(metric)
Bend Radius: installation	In. (mm)	0.75	(19.1)
Bend Radius: repeated	in. (mm)	2.5	(63.5)
Bending Moment	ft-lb (N-m)	0.25	(0.34)
Weight	lb/ft (kg/m)	0.034	(0.05)
Tensile Strength	lb (kg)	80	(36.3)
Flat Plate Crush	lb/in. (kg/mm)	20	(0.36)

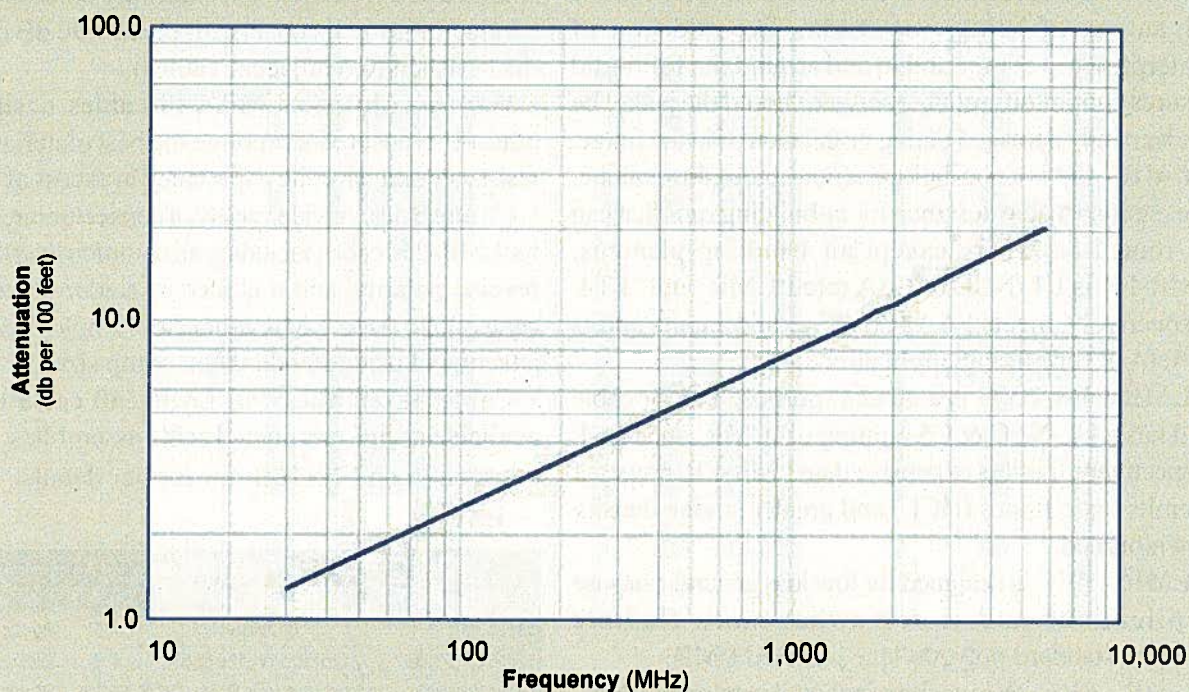
### Environmental Specifications

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)
Velocity of Propagation	%	84	
Dielectric Constant	NA	1.42	
Time Delay	nS/ft (nS/m)	1.21	(3.97)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	24.2	(79.4)
Inductance	uH/ft (uH/m)	0.060	(0.20)
Shielding Effectiveness	dB	>90	
DC Resistance			
Inner Conductor	ohms/1000ft (/km)	3.2	(10.5)
Outer Conductor	ohms/1000ft (/km)	3.89	(12.8)
Voltage Withstand	Volts DC	1500	
Jacket Spark	Volts RMS	5000	
Peak Power	kW	5.6	

### Attenuation vs. Frequency (typical)



Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800
<b>Attenuation dB/100 ft</b>	1.3	1.7	3.0	3.7	5.3	7.6	9.9	10.9	11.5	12.9	20.4
<b>Attenuation dB/100 m</b>	4.4	5.7	9.9	12.0	17.3	24.8	32.4	35.6	37.7	42.4	66.8
<b>Avg. Power kW</b>	1.49	1.15	0.66	0.54	0.38	0.26	0.20	0.18	0.17	0.15	0.10

#### Calculate Attenuation =

$(0.242080) \cdot \sqrt{\text{FMHz}} + (0.000330) \cdot \text{FMHz}$  (Interactive calculator available at [http://www.timesmicrowave.com/cable\\_calculators](http://www.timesmicrowave.com/cable_calculators))

#### Attenuation:

VSWR=1.0 ; Ambient = +25°C (77°F)

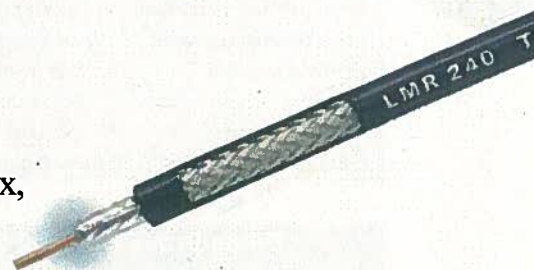
**Power:** VSWR=1.0; Ambient = +40°C; Inner Conductor = 100°C (212°F); Sea Level; dry air; atmospheric pressure; no solar loading



## LMR®-240 Flexible Low Loss Communications Coax

### Ideal for...

- Jumper Assemblies in Wireless Communications Systems
  - Short Antenna Feeder runs (e.g. WLL, GPS, LMR, Mobile Antennas)
  - Any application (e.g. WLL, GPS, LMR, WLAN, WISP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable
- **LMR® standard** is a UV Resistant Polyethylene jacketed cable designed for 20-year service outdoor use. The bending and handling characteristics are significantly better than air-dielectric and corrugated hard-line cables.
  - **LMR® - DB** is identical to standard LMR plus has the advantage of being watertight. The addition of waterproofing compound in and around the foil/braid insures continuous reliable service should the jacket be inadvertently damaged during installation or in the future.
  - **LMR® - FR** is a non-halogen (non-toxic), low smoke, fire retardant cable designed for in-building runs that can be routed anywhere except air handling plenums. LMR-FR is UL/NEC & CSA rated 'CMR' and 'FT4' respectively, meets FAA FAR25 requirements and is MSHA-P for mining applications.
  - **LMR® - FR-PVC** is a general-purpose indoor cable and has a UL/NEC & CSA rating of 'CMR' and 'FT4' respectively. It is less expensive than LMR-FR, however it emits toxic fumes (HCL) and greater smoke density when burned.
  - **LMR® - PVC** is designed for low loss general-purpose applications and is somewhat more flexible than the standard polyethylene jacketed LMR.
  - **LMR® - PVC-W** is a white-jacketed version of LMR-PVC for marine and other applications where color compatibility is desired.
  - **LMR® - MA** is a flexible cable designed specifically for mobile antenna applications. It has a PVC jacket and un-bonded aluminum tape to facilitate end stripping with automated equipment.
  - **Flexibility** and bendability are hallmarks of the LMR-240 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-240. 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-240 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-240 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-240 cable types are available as pre-terminated cable assemblies. Refer to the section on FlexTech for further details.



### Part Description

Part Number	Application	Jacket	Color	Stock Code
LMR-240	Outdoor	PE	Black	54021
LMR-240-DB	Outdoor/Watertight	PE	Black	54090
LMR-240-FR	Indoor/Outdoor Riser CMR	FRPE	Black	54029
LMR-240-FR-PVC	Indoor/Outdoor Riser CMR	FRPVC	Black	54214
LMR-240-PVC	General Purpose	PVC	Black	54140
LMR-240-PVC-W	General Purpose	PVC	White	54202
LMR-240-MA	Indoor & Mobile Antenna	PVC	Black	54046

### Construction Specifications

Description	Material	In.	(mm)
Inner Conductor	Solid BC	0.056	(1.42)
Dielectric	Foam PE	0.150	(3.81)
Outer Conductor	Aluminum Tape	0.155	(3.94)
Overall Braid	Tinned Copper	0.178	(4.52)
Jacket	(see table above)	0.240	(6.10)