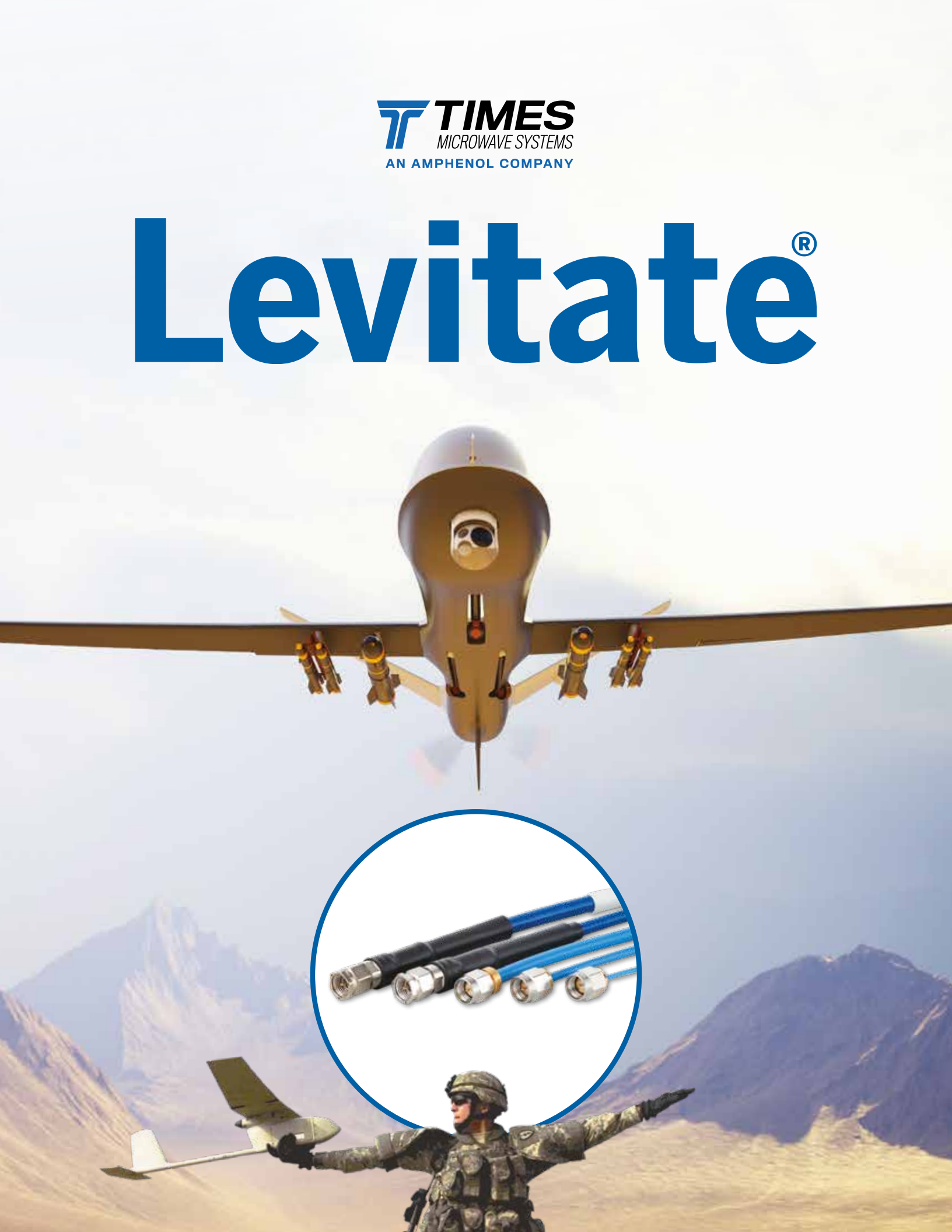
TIMES MICROWAVE SYSTEMS
AN AMPHENOL COMPANY

Levitate®



Levitate®

TIMES MICROWAVE SYSTEMS
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Levitate Cable Assemblies are engineered to meet the modern demands of both military and commercial RF systems. Offering ultra-lightweight construction with minimal signal loss, these assemblies are the perfect solution for avionics applications on all UAVs ranging from Group 1 - Group 5. With a budget-friendly price and product available in distribution, Levitate cables are built to support critical RF runs both inside and outside the box.

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Applications

- Flight Control
- Autopilot
- Communications, Navigation & Identification
- Electronic Warfare
- Camera & Video
- Telemetry
- Surveillance & Reconnaissance
- Weather Detection

The Department of Defense (DoD) classifies Unmanned Aircraft Systems (UAS) into five groups based on Maximum Gross Takeoff Weight (MGTOW), Operating Altitude and Airspeed.

	Group 1	Group 2	Group 3	Group 4	Group 5
LVT047	●	●	●	●	●
LVT086	●	●	●	●	●
LVT141	●	●	●	●	●
LVT157			●	●	●
LVT196			●	●	●

UAV Cable Assemblies

	Max Frequency	Diameter	Flexure	Loss	Weight	Temperature
LVT047	40 GHz	0.061 in (1.55 mm)	■■■■■	■■■□□	■■■■■	■■■■□
LVT086	40 GHz	0.105 in (2.67 mm)	■■■■■	■■■■□	■■■■■	■■■■□
LVT141	32 GHz	0.163 in (4.14 mm)	■■■■■	■■■■■	■■■■■	■■■■□
LVT157	8 GHz	0.157 in (4.0 mm)	■■■■□	■■■■■	■■■■■	■■■■□
LVT196	8 GHz	0.196 in (5.0 mm)	■■■■□	■■■■■	■■■■■	■■■■□

Levitate® 047

TIMES MICROWAVE SYSTEMS
AN AMPHENOL COMPANY

Specifications

Impedance 50 Ohms

Op Temp -85 to +302°F -65 to +150°C

	Units	
Maximum Diameter	in (mm)	0.064 (1.626)
Weight	lb/ft (kg/m)	0.0046 (0.0068)
Minimum Bend Radius	in (mm)	0.125 (3.175)
Maximum Frequency	GHz	40
Nominal Time Delay	ns/ft (ns/m)	1.45 (4.76)
Capacitance	pF/ft (pF/m)	29.85 (97.93)

Attenuation (max)

Frequency MHz	dB/100ft	dB/100m	Frequency MHz	dB/100ft	dB/100m
1000	39.1	128.3	11000	139.7	458.5
2000	56.1	183.9	12000	146.6	481.1
3000	69.4	227.6	13000	153.3	502.9
4000	80.8	265.2	14000	159.7	524.1
5000	91.0	298.7	15000	166.0	544.6
6000	100.4	329.5	16000	172.1	564.7
7000	109.1	358.1	17000	178.1	584.3
8000	117.4	385.1	18000	183.9	603.4
9000	125.1	410.6	26500	229.2	752.1
10000	132.6	435.1	40000	291.4	956.0

Cable Details

CENTER CONDUCTOR
Silver-Plated,
Copper-Clad Steel Wire

DIELECTRIC
Extruded Solid
PTFE

OUTER CONDUCTOR
Silver-Plated, Copper-Clad
Steel Flat Wire Braid

OUTER SHIELD
Silver-Plated,
Copper-Clad Steel
Round Wire Braid

JACKET
Extruded Blue FEP

Calculation

$$IL = \frac{(K1 \times \sqrt{(f)} + K2 \times f)}{100} \times \text{Cable Length} + \text{Connector Loss } \sqrt{(f)}$$

Use K values with matching length unit

Cable Insertion Loss f = Frequency (MHz)

K values	dB/100ft	dB/100m
K1	1.195	3.921
K2	0.001309	0.004295

Connectors

Type	Gender	Description	Geometry	Stock Code	Connector Code	Max. Frequency	Connector Loss
SMA	Male	SMA Striaght Male	Straight	47396	SM	27	0.03
SMP	Female	SMP Straight Female	Straight	47432	SMPF	40	0.03

Ordering Guide

LVT047	-XXX	XXX-	XX.X	X
Cable Code	Connector A	Connector B	Length	Units of measure: I = Inches, F = Feet, M = Meters

Levitate® 086

TIMES MICROWAVE SYSTEMS
AN AMPHENOL COMPANY

Specifications

Impedance 50 Ohms

Op Temp -85 to +302°F -65 to +150°C

	Units	
Maximum Diameter	in (mm)	0.108 (2.743)
Weight	lb/ft (kg/m)	0.0117 (0.0174)
Minimum Bend Radius	in (mm)	0.25 (6.35)
Maximum Frequency	GHz	40
Nominal Time Delay	ns/ft (ns/m)	1.45 (4.76)
Capacitance	pF/ft (pF/m)	29.47 (96.69)

Attenuation (max)

Frequency MHz	dB/100ft	dB/100m	Frequency MHz	dB/100ft	dB/100m
1000	21.7	71.2	11000	82.0	269.0
2000	31.4	103.2	12000	86.3	283.2
3000	39.2	128.7	13000	90.5	297.0
4000	46.0	150.9	14000	94.6	310.3
5000	52.1	171.0	15000	98.6	323.4
6000	57.8	189.6	16000	102.5	336.2
7000	63.1	207.0	17000	106.3	348.7
8000	68.1	223.5	18000	110.0	361.0
9000	72.9	239.3	26500	139.6	458.1
10000	77.5	254.4	40000	181.3	594.7

Cable Details

Calculation

$$IL = \frac{(K1 \times \sqrt{(f)} + K2 \times f)}{100} \times \text{Cable Length} + \text{Connector Loss } \sqrt{(f)}$$

Use K values with matching length unit

Cable Insertion Loss f = Frequency (MHz)

K values	dB/100ft	dB/100m
K1	0.644567	2.114721
K2	0.001309	0.004295

Connectors

Type	Gender	Description	Geometry	Stock Code	Connector Code	Max. Frequency	Connector Loss
SMA	Male	SMA Straight Male	Straight	47388	SM	27	0.03

Ordering Guide

LVT086 -XXX XXX- XX.X X

Cable Code | Connector A | Connector B | Length | Units of measure: I = Inches, F = Feet, M = Meters

Levitate® 141

TIMES MICROWAVE SYSTEMS
AN AMPHENOL COMPANY

Specifications

Impedance 50 Ohms

Op Temp -85 to +302°F -65 to +150°C

	Units	
Maximum Diameter	in (mm)	0.163 (4.14)
Weight	lb/ft (kg/m)	0.0282 (0.042)
Minimum Bend Radius	in (mm)	0.5 (12.77)
Maximum Frequency	GHz	32
Nominal Time Delay	ns/ft (ns/m)	1.45 (4.76)
Capacitance	pF/ft (pF/m)	29.06 (95.34)

Attenuation (max)

Frequency MHz	dB/100ft	dB/100m	Frequency MHz	dB/100ft	dB/100m
1000	12.8	41.9	11000	52.4	172.0
2000	18.8	61.8	12000	55.4	181.9
3000	23.8	78.0	13000	58.4	191.5
4000	28.2	92.4	14000	61.2	200.9
5000	32.2	105.6	15000	64.0	210.1
6000	35.9	117.9	16000	66.8	219.2
7000	39.5	129.6	17000	69.5	228.1
8000	42.9	140.8	18000	72.2	236.9
9000	46.2	151.5	26500	93.7	307.5
10000	49.4	161.9	32000	-	-

Cable Details

Calculation

$$IL = \frac{(K1 \times \sqrt{(f)} + K2 \times f)}{100} \times \text{Cable Length} + \text{Connector Loss } \sqrt{(f)}$$

Use K values with matching length unit

Cable Insertion Loss f = Frequency (MHz)

K values	dB/100ft	dB/100m
K1	0.3626	1.1896
K2	0.001309	0.004295

Connectors

Type	Gender	Description	Geometry	Stock Code	Connector Code	Max. Frequency	Connector Loss
SMA	Male	Straight SMA Male	Straight	47404	SM	27	0.03

Ordering Guide

LVT141 -XXX XXX- XX.X X

Cable Code | Connector A | Connector B | Length | Units of measure: I = Inches, F = Feet, M = Meters

Levitate® 157

TIMES MICROWAVE SYSTEMS
AN AMPHENOL COMPANY

Specifications

Impedance 50 Ohms

Op Temp -85 to +302°F -65 to +150°C

	Units	
Maximum Diameter	in (mm)	0.16 (4.06)
Weight	lb/ft (kg/m)	0.02 (0.0298)
Minimum Bend Radius	in (mm)	0.75 (19.05)
Maximum Frequency	GHz	8
Nominal Time Delay	ns/ft (ns/m)	1.33 (4.36)
Capacitance	pF/ft (pF/m)	25.94 (85.10)

Attenuation (max)

Frequency MHz	dB/100ft	dB/100m
1000	11.8	38.9
2000	16.8	55.3
3000	20.7	68.0
4000	24.0	78.8
5000	26.9	88.4
6000	29.6	97.1
7000	32.0	105.1
8000	34.3	112.6

Cable Details

Calculation

$$IL = \frac{(K1 \times \sqrt{f} + K2 \times f)}{100} \times \text{Cable Length} + \text{Connector Loss } \sqrt{f}$$

Use K values with matching length unit

Cable Insertion Loss f = Frequency (MHz)

K values	dB/100ft	dB/100m
K1	0.369485	1.212221
K2	0.000161	0.000528

Connectors

Type	Gender	Description	Geometry	Stock Code	Connector Code	Max. Frequency	Connector Loss
TNC	Male	TNCA Straight Male	Straight	3190-3542	TM	12.4	0.05
SMA	Male	SMA Right Angle Male	Right Angle	3190-3544	SMR	12.4	0.08
SMA	Male	SMA Straight Male	Straight	3190-3553	SM	12.4	0.05

Ordering Guide

LVT157	-XXX	XXX-	XX.X	X
Cable Code	Connector A	Connector B	Length	Units of measure: I = Inches, F = Feet, M = Meters

Levitate® 196

TIMES MICROWAVE SYSTEMS
AN AMPHENOL COMPANY

Specifications

Impedance 50 Ohms

Op Temp -85 to +302°F -65 to +150°C

	Units	
Maximum Diameter	in (mm)	0.199 (5.06)
Weight	lb/ft (kg/m)	0.0292 (0.0435)
Minimum Bend Radius	in (mm)	1 (25)
Maximum Frequency	GHz	8
Nominal Time Delay	ns/ft (ns/m)	1.33 (4.36)
Capacitance	pF/ft (pF/m)	27.43 (89.99)

Attenuation (max)

Frequency MHz	dB/100ft	dB/100m
1000	9.0	29.6
2000	12.9	42.2
3000	15.9	52.0
4000	18.4	60.4
5000	20.7	67.8
6000	22.7	74.5
7000	24.6	80.7
8000	26.4	86.6

Cable Details

Calculation

$$IL = \frac{(K1 \times \sqrt{(f)} + K2 \times f)}{100} \times \text{Cable Length} + \text{Connector Loss } \sqrt{(f)}$$

Use K values with matching length unit

Cable Insertion Loss f = Frequency (MHz)

K values	dB/100ft	dB/100m
K1	0.2807	0.9209
K2	0.000161	0.000528

Connectors

Type	Gender	Description	Geometry	Stock Code	Connector Code	Max. Frequency	Connector Loss
TNC	Male	TNCA Straight Male	Straight	3910-3543	TM	12.4	0.05
SMA	Male	SMA Right Angle Male	Right Angle	3190-3545	SMR	12.4	0.08
SMA	Male	SMA Straight Male	Straight	3190-3554	SM	12.4	0.05

Ordering Guide

LVT196	-XXX	XXX-	XX.X	X
Cable Code	Connector A	Connector B	Length	Units of measure: I = Inches, F = Feet, M = Meters

Notes

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