

# MACRO, DAS, & SMALL CELL APPLICATIONS CATALOG

## INTERNATIONAL EDITION



[microlabtech.com](http://microlabtech.com)



Microlab is a leading component and integrated solution partner relied on for tackling the challenges with macro, small cell, and distributed antenna systems (DAS), and small cell – including those for 5G and TETRA/public safety. Whether designers and system integrators are seeking lower cost deployments or better system performance with smaller components that are available when needed, Microlab engineers can provide consultation to select the most appropriate standard or custom solutions to meet these needs. Microlab solutions provide many advantages:

- Ultra-wide bandwidths for 5G applications and future-proofing investments,
- iBwave and Ranplan component library for easier design and simulation,
- EN50155 Rail certified products for applications in transport networks,
- Small size to reduce occupied space and provide flexibility for concealment,
- Low dissipative loss for maximum network throughput and coverage, and
- Guaranteed low PIM (passive intermodulation) for optimal network performance.

All typically available from stock or through wide distribution network. Custom solutions can be designed for specific requirements as well, often available within weeks.

Microlab products are available in all the following categories:

- Hybrid Combiners ..... pg. 3
- Multi-band Combiners ..... pg. 4
- Tappers ..... pg. 5
- Directional Couplers ..... pg. 6-7
- Splitters ..... pg. 8
- Attenuators..... pg. 9-11
- Terminations/Loads ..... pg. 12-13
- Cables ..... pg. 14
- Antennas..... pg. 15
- Products for Harsh Environments... pg. 16
- Integrated Solutions..... pg. 17
- GPS Solutions..... pg. 18-19

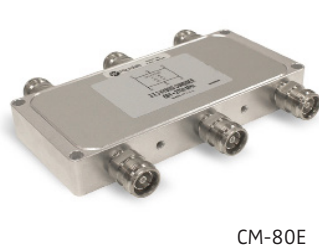
Custom versions of many components are available. Visit [Microlabtech.com](http://Microlabtech.com) for more information.

Go to Page 20 for Microlab contact information

### High Power Hybrid Combiners – Low PIM – Standard Frequency Range (2700MHz) and Ultra-Wideband (6GHz)

Model	Frequency (MHz)	Coupling Value	Ports In:Out	Power/Input (W)	Conn. Type	Ingress	PIM dBC (dBm)
CT-84N	694-2700	3 dB	2:1	80	N	IP67	-161 (-118)
CT-84KD	617-2700	3 dB	2:2	80	7-16	IP68	-161 (-118)
CT-84KE	617-2700	3 dB	2:2	80	4.3-10	IP68	-161 (-118)
CA-14D	350-5925	3 dB	2:2	200	7-16	IP67	-161 (-118)
CA-14E	350-5925	3 dB	2:2	200	4.3-10	IP67	-161 (-118)
CA-14N	350-5925	3 dB	2:2	200	N	IP67	-161 (-118)
CA-16D	350-2700	3 dB	2:2	200	7-16	IP65	-161 (-118)
CA-16E	350-2700	3 dB	2:2	200	4.3-10	IP65	-161 (-118)
CA-16N	350-2700	3 dB	2:2	200	N	IP65	-161 (-118)
CA-141E	617-5925	3 dB	2:2	100	4.3-10	IP67	-161 (-118)
CM-80D	694-2700	4.8 dB	3:3	150	7-16	IP64	-161 (-118)
CM-80E	694-2700	4.8 dB	3:3	150	4.3-10	IP64	-161 (-118)
CM-80N	694-2700	4.8 dB	3:3	150	N	IP64	-161 (-118)
CM-88D	694-2700	6 dB	4:4	150	7-16	IP64	-161 (-118)
CM-88E	694-2700	6 dB	4:4	150	4.3-10	IP64	-161 (-118)
CM-88N	694-2700	6 dB	4:4	150	N	IP64	-161 (-118)
CM-141E	617-5925	6 dB	4:4	100	4.3-10	IP65	-161 (-118)
CM-14D*	350-5925	6 dB	4:4	200	7-16	IP67	-161 (-118)
CM-14E*	350-5925	6 dB	4:4	200	4.3-10	IP67	-161 (-118)
CM-14N*	350-5925	6 dB	4:4	200	N	IP67	-161 (-118)

\*Rackmount version available.  
Contact your Microlab Sales Representative for further details.



### High Power – Low Loss – Low PIM

Model	Port #1	Port #2	Port #3	Port #4	Isolation	Power/ Input (W)	Conn. Type	Ingress	PIM dBc (dBm)
BK-12E	80-960	1695-2700	--	--	50dB	120	4.3-10	IP64*	-161 (-118)
BK-12D	80-960	1695-2700	--	--	50dB	120	7-16	IP64*	-161 (-118)
BK-12N	80-960	1695-2700	--	--	50dB	120	N	IP64*	-161 (-118)
BK-201E	617-960	1695-2700	--	--	50dB	250	4.3-10	IP67	-161 (-118)
BK-201N	617-960	1695-2700	--	--	50dB	250	N	IP67	-161 (-118)
BK-2004E	617-960 1695-2200 2496-2700	2300-2400	--	--	50dB	150	4.3-10	IP67	-161 (-118)
BK-24D	80-520 694-800	800-2500 2500-2700	--	--	50dB 30dB	50 200	7-16	IP64*	-161 (-118)
BK-24E	80-520 694-800	800-2500 2500-2700	--	--	50dB 30dB	50 200	4.3-10	IP64*	-161 (-118)
BK-24N	80-520 694-800	800-2500 2500-2700	--	--	50dB 30dB	50 200	N	IP64*	-161 (-118)
BK-261N	80-2690	3300-5925	--	--	50dB	50/5	N	IP64	-161 (-118)
BK-261E	80-2690	3300-5925	--	--	50dB	50/5	4.3-10	IP64*	-161 (-118)
BK-251E	1710-1880	1920-2170	--	--	50dB	200	4.3-10	IP67	-155 (-112)
BK-52E	1710-2170	2490-2690	--	--	50dB	250	4.3-10	IP67	-161 (-118)
BK-693E	617-2180	2300-2700	--	--	60dB	200	4.3-10	IP67	-161 (-118)
BK-351E	1710-1880	1920-2170	2300-2700	--	50dB	200	4.3-10	IP67	-155 (-112)
BK-311E	698-960	1710-1880	1920-2170	--	60dB	200	4.3-10	IP67	-155 (-112)
BK-4002E	698-960	1710-1880	1920-2170	2300-2700	50dB	200	4.3-10	IP67	-155 (-112)

\*Painted Models available for IP67 Ingress Protection. Contact your Microlab Sales Representative for further details.



BK-201E



BK-4002E



BK-311E

**High Power Tappers – Low PIM – Ultra-Wideband (6GHz)**

Model	Frequency (MHz)	Tapper Value	Power Rating (W)	Conn. Type	Ingress	PIM (dBc)
DN-34FD	350-5930	3 dB	500	7-16	IP67	-161 (-118)
DN-34FE	350-5930	3 dB	500	4.3-10	IP67	-161 (-118)
DN-34FN	350-5930	3 dB	500	N	IP67	-161 (-118)
DN-44FD	350-5930	4.8 dB	500	7-16	IP67	-161 (-118)
DN-44FE	350-5930	4.8 dB	500	4.3-10	IP67	-161 (-118)
DN-44FN	350-5930	4.8 dB	500	N	IP67	-161 (-118)
DN-54FD	350-5930	6 dB	500	7-16	IP67	-161 (-118)
DN-54FE	350-5930	6 dB	500	4.3-10	IP67	-161 (-118)
DN-54FN	350-5930	6 dB	500	N	IP67	-161 (-118)
DN-64FD	350-5930	8 dB	500	7-16	IP67	-161 (-118)
DN-64FE	350-5930	8 dB	500	4.3-10	IP67	-161 (-118)
DN-64FN	350-5930	8 dB	500	N	IP67	-161 (-118)
DN-74FD	350-5930	10 dB	500	7-16	IP67	-161 (-118)
DN-74FE	350-5930	10 dB	500	4.3-10	IP67	-161 (-118)
DN-74FN	350-5930	10 dB	500	N	IP67	-161 (-118)
DN-84FD	350-5930	13 dB	500	7-16	IP67	-161 (-118)
DN-84FE	350-5930	13 dB	500	4.3-10	IP67	-161 (-118)
DN-84FN	350-5930	13 dB	500	N	IP67	-161 (-118)
DN-94FD	350-5930	15 dB	500	7-16	IP67	-161 (-118)
DN-94FE	350-5930	15 dB	500	4.3-10	IP67	-161 (-118)
DN-94FN	350-5930	15 dB	500	N	IP67	-161 (-118)
DN-04FD	350-5930	20 dB	500	7-16	IP67	-161 (-118)
DN-04FE	350-5930	20 dB	500	4.3-10	IP67	-161 (-118)
DN-04N	350-5930	20 dB	500	N	IP67	-161 (-118)
DN-14FD	350-5930	30 dB	500	7-16	IP67	-161 (-118)
DN-14FE	350-5930	30 dB	500	4.3-10	IP67	-161 (-118)
DN-14FN	350-5930	30 dB	500	N	IP67	-161 (-118)
DN-14MFE	350-5930	30 dB	500	4.3-10(m-f)	IP67	-161 (-118)



DN-34FE

## High Power Directional Couplers – Low PIM – Standard Frequency Range (2700MHz)

Model	Frequency (MHz)	Coupling Value	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
CC-05D	575-2700	5 dB	300	7-16	IP67	-161 (-118)
CC-05E	575-2700	5 dB	300	4.3-10	IP67	-161 (-118)
CC-05N	575-2700	5 dB	300	N	IP67	-161 (-118)
CC-06D	575-2700	6 dB	300	7-16	IP67	-161 (-118)
CC-06E	575-2700	6 dB	300	4.3-10	IP67	-161 (-118)
CC-06N	575-2700	6 dB	300	N	IP67	-161 (-118)
CC-07D	575-2700	7 dB	300	7-16	IP67	-161 (-118)
CC-07E	575-2700	7 dB	300	4.3-10	IP67	-161 (-118)
CC-07N	575-2700	7 dB	300	N	IP67	-161 (-118)
CC-08D	575-2700	8 dB	300	7-16	IP67	-161 (-118)
CC-08E	575-2700	8 dB	300	4.3-10	IP67	-161 (-118)
CC-08N	575-2700	8 dB	300	N	IP67	-161 (-118)
CC-10D	575-2700	10 dB	300	7-16	IP67	-161 (-118)
CC-10E	575-2700	10 dB	300	4.3-10	IP67	-161 (-118)
CC-10N	575-2700	10 dB	300	N	IP67	-161 (-118)
CC-13D	575-2700	13 dB	300	7-16	IP67	-161 (-118)
CC-13E	575-2700	13 dB	300	4.3-10	IP67	-161 (-118)
CC-13N	575-2700	13 dB	300	N	IP67	-161 (-118)
CC-15D	575-2700	15 dB	300	7-16	IP67	-161 (-118)
CC-15E	575-2700	15 dB	300	4.3-10	IP67	-161 (-118)
CC-15N	575-2700	15 dB	300	N	IP67	-161 (-118)
CC-20D	575-2700	20 dB	300	7-16	IP67	-161 (-118)
CC-20E	575-2700	20 dB	300	4.3-10	IP67	-161 (-118)
CC-20N	575-2700	20 dB	300	N	IP67	-161 (-118)
CC-30D	575-2700	30 dB	300	7-16	IP67	-161 (-118)
CC-30E	575-2700	30 dB	300	4.3-10	IP67	-161 (-118)
CC-30N	575-2700	30 dB	300	N	IP67	-161 (-118)
CK-761D	350-2700	6 dB	300	7-16	IP65	-161 (-118)
CK-761E	350-2700	6 dB	300	4.3-10	IP65	-161 (-118)
CK-761N	350-2700	6 dB	300	N	IP65	-161 (-118)
CK-771D	350-2700	10 dB	300	7-16	IP65	-161 (-118)
CK-771E	350-2700	10 dB	300	4.3-10	IP65	-161 (-118)
CK-771N	350-2700	10 dB	300	N	IP65	-161 (-118)
CK-751D	350-2700	15 dB	300	7-16	IP65	-161 (-118)
CK-751E	350-2700	15 dB	300	4.3-10	IP65	-161 (-118)
CK-751N	350-2700	15 dB	300	N	IP65	-161 (-118)



### High Power Directional Couplers – Low PIM – Extended Frequency Range (3800MHz)

Model	Frequency (MHz)	Coupling Value	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
CK-16D	617-3800	6 dB	200	7-16	IP64*	-161 (-118)
CK-16E	617-3800	6 dB	200	4.3-10	IP64*	-161 (-118)
CK-16N	617-3800	6 dB	200	N	IP64*	-161 (-118)
CK-17D	617-3800	10 dB	200	7-16	IP64*	-161 (-118)
CK-17E	617-3800	10 dB	200	4.3-10	IP64*	-161 (-118)
CK-17N	617-3800	10 dB	200	N	IP64*	-161 (-118)
CK-15D	617-3800	15 dB	200	7-16	IP64*	-161 (-118)
CK-15E	617-3800	15 dB	200	4.3-10	IP64*	-161 (-118)
CK-15N	617-3800	15 dB	200	N	IP64*	-161 (-118)
CK-18D	617-3800	20 dB	200	7-16	IP64*	-161 (-118)
CK-18E	617-3800	20 dB	200	4.3-10	IP64*	-161 (-118)
CK-18N	617-3800	20 dB	200	N	IP64*	-161 (-118)
CK-19D	617-3600†	30 dB	200	7-16	IP64*	-161 (-118)
CK-19E	617-3600†	30 dB	200	4.3-10	IP64*	-161 (-118)
CK-19N	617-3600†	30 dB	200	N	IP64*	-161 (-118)

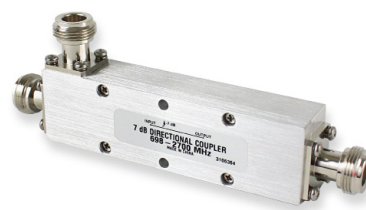
\*Painted Models available for IP67 Ingress Protection. † CK-19 rated to 3600MHz. Contact your Microlab Sales Representative for further details.

### Low Power Directional Couplers – Standard Frequency Range (2700MHz)

Model	Frequency (MHz)	Coupling Value	Power Rating (W)	Conn. Type	Ingress	PIM
CK-51N	694-2700	5 dB	50	N	IP64	-
CK-56N	694-2700	6 dB	50	N	IP64	-
CK-52N	694-2700	7 dB	50	N	IP64	-
CK-57N	694-2700	10 dB	50	N	IP64	-
CK-53N	694-2700	13 dB	50	N	IP64	-
CK-54N	694-2700	15 dB	50	N	IP64	-
CK-58N	694-2700	20 dB	50	N	IP64	-
CK-59N	694-2700	30 dB	50	N	IP64	-



CK-16E



CK-52N

**High Power – Low PIM – Reactive Splitters - Standard (2700MHz), Extended (3800MHz), and Ultra-Wideband (6GHz) Frequency Range**

Model	Frequency (MHz)	Ways	Loss	Power/Input (W)	Conn. Type	Ingress	PIM dBc (dBm)
D2-16FD	694-3800	2	3 dB	500	7-16	IP67	-161 (-118)
D2-16FE	694-3800	2	3 dB	500	4.3-10	IP67	-161 (-118)
D2-16FN	694-3800	2	3 dB	300	N	IP67	-161 (-118)
D3-16FD	694-3800	3	4.8 dB	500	7-16	IP67	-161 (-118)
D3-16FE	694-3800	3	4.8 dB	500	4.3-10	IP67	-161 (-118)
D3-16FN	694-3800	3	4.8 dB	300	N	IP67	-161 (-118)
D4-16FD	694-3800	4	6 dB	500	7-16	IP67	-161 (-118)
D4-16FE	694-3800	4	6 dB	500	4.3-10	IP67	-161 (-118)
D4-16FN	694-3800	4	6 dB	300	N	IP67	-161 (-118)
D2-08FD	380-2700	2	3 dB	500	7-16	IP67	-155 (-112)
D2-08FE	380-2700	2	3 dB	500	4.3-10	IP67	-155 (-112)
D2-08FN	380-2700	2	3 dB	300	N	IP67	-155 (-112)
D3-08FD	380-2700	3	4.8 dB	500	7-16	IP67	-155 (-112)
D3-08FE	380-2700	3	4.8 dB	500	4.3-10	IP67	-155 (-112)
D3-08FN	380-2700	3	4.8 dB	300	N	IP67	-155 (-112)
D4-08FD	380-2700	4	6 dB	500	7-16	IP67	-155 (-112)
D4-08FE	380-2700	4	6 dB	500	4.3-10	IP67	-155 (-112)
D4-08FN	380-2700	4	6 dB	300	N	IP67	-155 (-112)
D2-83FE	617-5925	2	3 dB	300	4.3-10	IP67	-161 (-118)
D3-83FE	617-5925	3	4.8 dB	300	4.3-10	IP67	-161 (-118)
D4-83FE	617-5925	4	6 dB	300	4.3-10	IP67	-161 (-118)

**Low Power – Low PIM – Wilkinson Splitters - Standard Frequency Range (2700MHz)**

Model	Frequency (MHz)	Ways	Loss	Power/Input (W)	Conn. Type	Ingress	PIM dBc (dBm)
D2-74FE	575-2700	2	3 dB	50	4.3-10	IP65	-154 (-111)
D3-74FE	575-2700	3	4.8 dB	50	4.3-10	IP65	-154 (-111)
D4-74FE	575-2700	4	6 dB	50	4.3-10	IP65	-154 (-111)
D2-72FE	694-2700	2	3 dB	50	4.3-10	-	-154 (-111)
D3-72FE	694-2700	3	4.8 dB	50	4.3-10	-	-154 (-111)
D4-72FE	694-2700	4	6 dB	50	4.3-10	-	-154 (-111)
D2-72FN	694-2700	2	3 dB	50	N	-	-154 (-111)
D3-72FN	694-2700	3	4.8 dB	50	N	-	-154 (-111)
D4-72FN	694-2700	4	6 dB	50	N	-	-154 (-111)





**High Power – Low PIM – Standard Frequency Range (2700MHz)**

Model	Frequency (MHz)	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
FZE-03FD	694-2700	80	7-16	IP67	-155 (-112)
FZE-03FE	694-2700	80	4.3-10	IP67	-155 (-112)
FZE-03FN	694-2700	80	N	IP67	-155 (-112)
FZE-06D	694-2700	133	7-16	IP67	-155 (-112)
FZE-06E	694-2700	133	4.3-10	IP67	-155 (-112)
FZE-06N	694-2700	133	N	IP67	-155 (-112)
FZE-10D	694-2700	110	7-16	IP67	-155 (-112)
FZE-10E	694-2700	110	4.3-10	IP67	-155 (-112)
FZE-10N	694-2700	110	N	IP67	-155 (-112)
FZE-15D	694-2700	100	7-16	IP67	-155 (-112)
FZE-15E	694-2700	100	4.3-10	IP67	-155 (-112)
FZE-15N	694-2700	100	N	IP67	-155 (-112)
FZE-20D	694-2700	100	7-16	IP67	-155 (-112)
FZE-20E	694-2700	100	4.3-10	IP67	-155 (-112)
FZE-20N	694-2700	100	N	IP67	-155 (-112)
FZE-30D	694-2700	100	7-16	IP67	-155 (-112)
FZE-30E	694-2700	100	4.3-10	IP67	-155 (-112)
FZE-30E	694-2700	100	N	IP67	-155 (-112)

**Low Power – Low PIM – Standard Frequency Range (2700MHz)**

Model	Frequency (MHz)	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
FYE-06D	694-2700	13	7-16	IP67	-147 (-110)
FYE-06E	694-2700	13	4.3-10	IP67	-147 (-110)
FYE-06N	694-2700	13	N	IP67	-147 (-110)
FYE-10D	694-2700	10	7-16	IP67	-147 (-110)
FYE-10E	694-2700	10	4.3-10	IP67	-147 (-110)
FYE-10N	694-2700	10	N	IP67	-147 (-110)
FYE-15D	694-2700	10	7-16	IP67	-147 (-110)
FYE-15E	694-2700	10	4.3-10	IP67	-147 (-110)
FYE-15N	694-2700	10	N	IP67	-147 (-110)
FYE-20D	694-2700	10	7-16	IP67	-147 (-110)
FYE-20E	694-2700	10	4.3-10	IP67	-147 (-110)
FYE-20N	694-2700	10	N	IP67	-147 (-110)

\*PIM test conducted at de-rated power level in accordance with product maximum input power rating



FZE-06D



FYE-06N

**High Power Resistive Models - Standard Frequency Range (2700MHz)**

Model	Frequency (MHz)	Power Rating (W)	Conn. Type
AS-10D	DC-3000	100	7-16 (m-f)
AS-10N	DC-3000	100	N (m-f)
AS-15D	DC-3000	100	7-16 (m-f)
AS-15N	DC-3000	100	N (m-f)
AS-20D	DC-3000	100	7-16 (m-f)
AS-20N	DC-3000	100	N (m-f)
AS-30D	DC-3000	100	7-16 (m-f)
AS-30N	DC-3000	100	N (m-f)
AR-03D	DC-3000	50	7-16 (m-f)
AR-03E	DC-3000	50	4.3-10 (m-f)
AR-03N	DC-3000	50	N (m-f)
AR-06D	DC-3000	50	7-16 (m-f)
AR-06E	DC-3000	50	4.3-10 (m-f)
AR-06N	DC-3000	50	N (m-f)
AR-10D	DC-3000	50	7-16 (m-f)
AR-10E	DC-3000	50	4.3-10 (m-f)
AR-10N	DC-3000	50	N (m-f)
AR-20D	DC-3000	50	7-16 (m-f)
AR-20E	DC-3000	50	4.3-10 (m-f)
AR-20N	DC-3000	50	N (m-f)
AR-30D	DC-3000	50	7-16 (m-f)
AR-30E	DC-3000	50	4.3-10 (m-f)
AR-30N	DC-3000	50	N (m-f)



AS-10D

**Low Power Attenuators - Ultra-Wideband (6GHz)**

Model Number	Attenuation	Frequency	Power Rating	Conn. Type
AT-01E	1	DC-6GHz	2W	4.3-10
AT-02E	2	DC-6GHz	2W	4.3-10
AT-03E	3	DC-6GHz	2W	4.3-10
AT-04E	4	DC-6GHz	2W	4.3-10
AT-05E	5	DC-6GHz	2W	4.3-10
AT-06E	6	DC-6GHz	2W	4.3-10
AT-07E	7	DC-6GHz	2W	4.3-10
AT-08E	8	DC-6GHz	2W	4.3-10
AT-09E	9	DC-6GHz	2W	4.3-10
AT-10E	10	DC-6GHz	2W	4.3-10
AT-11E	11	DC-6GHz	2W	4.3-10
AT-12E	12	DC-6GHz	2W	4.3-10
AT-13E	13	DC-6GHz	2W	4.3-10
AT-14E	14	DC-6GHz	2W	4.3-10
AT-15E	15	DC-6GHz	2W	4.3-10
AT-20E	20	DC-6GHz	2W	4.3-10
AT-30E	30	DC-6GHz	2W	4.3-10



AT-03E

### Low PIM Cable Load Models – Standard Frequency Range (2700MHz)

Model	Frequency (MHz)	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
TKE-205MD	350-2700	5	7-16 (m)	IP67	-155 (-117)
TKE-205ME	350-2700	5	4.3-10 (m)	IP67	-155 (-117)
TKE-205MT	350-2700	5	NEX10 (m)	IP67	-155 (-117)
TKE-210MD	350-2700	10	7-16 (m)	IP67	-155 (-117)
TKE-210ME	350-2700	10	4.3-10 (m)	IP67	-155 (-117)
TKE-210MT	350-2700	10	NEX10 (m)	IP67	-155 (-117)
TKE-225MD	350-2700	25	7-16 (m)	IP67	-155 (-114)
TKE-225ME	350-2700	25	4.3-10 (m)	IP67	-155 (-114)
TKE-225MN	350-2700	25	N (m)	IP67	-155 (-114)
TKE-25MD	400-2700	60	7-16 (m)	IP67	-155 (-114)
TKE-25ME	400-2700	60	4.3-10 (m)	IP67	-155 (-112)
TKE-25MN	400-2700	60	N (m)	IP67	-155 (-112)
TKE-27MD	400-2700	100	7-16 (m)	IP67	-155 (-112)
TKE-27ME	400-2700	100	4.3-10 (m)	IP67	-155 (-112)
TKE-27MN	400-2700	100	N (m)	IP67	-155 (-112)
TKE-28MD	300-2700	200	7-16 (m)	--	-155 (-112)
TKE-28ME	300-2700	200	4.3-10 (m)	--	-155 (-112)
TKE-28MN	300-2700	200	N (m)	--	-155 (-112)
TKE-28FD	300-2700	200	7-16 (f)	--	-155 (-112)
TKE-28FE	300-2700	200	4.3-10 (f)	--	-155 (-112)
TKE-28FN	300-2700	200	N (f)	--	-155 (-112)

\*PIM test conducted at de-rated power level in accordance with product maximum input power rating

### Low PIM Cable Load Models – Extended (3800MHz) and Ultra-wideband (6GHz) Frequency Ranges

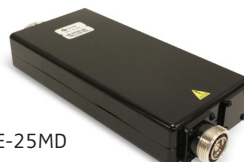
Model	Frequency (MHz)	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
TK-3100FD	350-3800	100	7-16 (f)	IP67	-161 (-118)
TK-3100FE	350-3800	100	4.3-10 (f)	IP67	-161 (-118)
TK-3100FN	350-3800	100	N (f)	IP67	-161 (-118)
TK-3100MD	350-3800	100	7-16 (m)	IP67	-161 (-118)
TK-3100ME	350-3800	100	4.3-10 (m)	IP67	-161 (-118)
TK-3100MN	350-3800	100	N (m)	IP67	-161 (-118)
TK-605ME	350-5925	5	4.3-10 (m)	IP67	-161 (-124)
TK-605FE	350-5925	5	4.3-10 (f)	IP67	-161 (-124)
TK-605MT	350-5925	5	NEX10 (m)	IP67	-161 (-124)
TK-610ME	350-5925	10	4.3-10 (m)	IP67	-161 (-124)
TK-610FE	350-5925	10	4.3-10 (f)	IP67	-161 (-124)
TK-610MT	350-5925	10	NEX10 (m)	IP67	-161 (-124)
TK-625ME	350-5925	25	4.3-10 (m)	IP67	-161 (-120)

\*Terminations with Weather Protection Boot available, inquire for details.

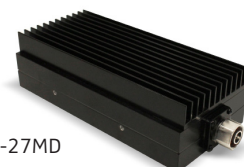
TKE-210ME



TKE-25MD



TKE-27MD



**Resistive Models - Standard (2700MHz), Extended (3800MHz), and Ultra-Wideband (6GHz)**

Model	Frequency (MHz)	Power Rating (W)	Conn. Type	Ingress
TA-1MF	DC-2.5GHz	1	SMA (m)	--
TA-5MF	DC-18GHz	2	SMA (m)	--
TA-2MHE	DC-6000	2	4.3-10(m)	IP65
TA-2MD	DC-6000	2	7-16 (m)	IP67
TA-2MN	DC-3000	2	N(m)	IP67
TA-5MN	DC-4000	2	N(m)	--
TB-5MD	DC-5500	10	7-16 (m)	IP64
TB-5MN	DC-5500	10	N(m)	IP64
TB-6MN	DC-2500	20	N(m)	IP64
TB-10MD	DC-3000	25	7-16 (m)	IP64
TB-10MN	DC-3000	25	N(m)	IP64
TB-70MD	DC-4000	50	7-16 (m)	--
TB-70MN	DC-4000	50	N(m)	--
TB-75MD	DC-4000	100	7-16 (m)	--
TB-75MN	DC-4000	100	N(m)	--
TB-80MD	DC-4000	150	7-16 (m)	--
TB-80MN	DC-4000	150	N(m)	--
TB-90MD	DC-4000	250	7-16 (m)	--
TB-90MN	DC-4000	250	N(m)	--

\*(f) connector models available on most, inquire for details



TA-2MHE



TB-5MD



TB-75MN

### DC to 6GHz



JA series



JD series



JE series

Microlab Coaxial Jumper Cables are built for consistent low PIM performance. Designed for use in systems where excellent electrical performance and mechanical reliability are paramount. With an operating range of DC to 6 GHz, these cables are ideal for all telecommunication applications. They are available in multiple lengths, diameters, and connector options.

These ruggedized cables come with tri-metal plated connectors made to MIL-C-39012 specifications. Microlab's jumper cables are also available with DC block features.

Series	JA Series	JB Series	JD Series	JE Series
Frequency Range	DC-6GHZ	DC-6GHZ	DC-6GHZ	DC-6GHZ
Power Rating	100W	100W	140W	380W
Cable Diameter	0.141in	0.141in	0.25in (1/4in)	0.5in (1/2in)
PIM	-158dBc	-158dBc	-160dBc	-160dBc
Connectors	4.3-10 7/16 N NEX10 2.2-5	4.3-10 Right Angle N Right Angle	4.3-10 7/16 N NEX10 2.2-5	4.3-10 7/16 N 2.2-5
Temperature	-40C to +125C	-40C to +125C	-40C to +125C	-40C to +125C
Max Insertion Loss/meter	--	--	--	--
380MHz	0.3dB	0.3dB	0.2dB	0.1dB
960MHz	0.5dB	0.5dB	0.3dB	0.1dB
1700MHz	0.6dB	0.6dB	0.4dB	0.2dB
2700MHz	0.8dB	0.8dB	0.5dB	0.2dB
6000MHz	1.2dB	1.0dB	0.8dB	0.4dB

**In-Building Antennas**

Model	Frequency (MHz)	Style	MIMO	Power (W)	Conn Type	Ingress	PIM dBc (dBm)
YA-14NF	698-960 / 1710-3500	flat omni		50	N	--	-140 (-97)
YA-17NF	380-470 / 698-960 / 1710-6000	omni		50	N	--	-153 (-110)
YA-18NF	698-960 / 1500-6000	omni		50	N	--	-153 (-110)
YA-20NF	698-960 / 1700-2700	directional		50	N	--	-140 (-97)
YA-30NF	698-960 / 1710-2700	low profile omni	Y	50	N	--	-153 (-110)
YA-31NF	698-960 / 1500-6000	low profile omni	Y	50	N	--	-153 (-110)



YA-31NF



YA-14NF



YA-30NF

### Features and Benefits

- 10-year lifespan in corrosive environments\*
- IP68-Waterproof when submerged for extended periods
- 4-hole flanged connectors to withstand extremely high installation torque that can cause damage and degrade RF Performance

\*Complies with Telcordia GR-3108-CORE paragraph 6.2 "Salt Fog Exposure" as Class 4 products for 30 Days as defined by ASTM-8117

### Hybrid Combiners – Standard Frequency Range (2700 MHz)

Model	Description	Coupling	Ports In:Out	Power/ Input (W)	Conn. Type	Ingress	PIM dBm (dBc)
CA-84KD	617-2700	3 dB	2:2	80	7-16	IP68	-161 (-118)
CA-84KE	617-2700	3 dB	2:2	80	4.3-10	IP68	-161 (-118)
CM-80KD	617-2700	4.8 dB	3:3	150	7-16	IP68	-161 (-118)
CM-80KE	617-2700	4.8 dB	3:3	150	4.3-10	IP68	-161 (-118)
CM-88KD	617-2700	6 dB	4:4	150	7-16	IP68	-161 (-118)
CM-88KE	617-2700	6 dB	4:4	150	4.3-10	IP68	-161 (-118)
CT-84KD	698-2700	3 dB	2:1	80	7-16	IP68	-161 (-118)
CT-84KE	698-2700	3 dB	2:1	80	4.3-10	IP68	-161 (-118)

### Directional Couplers – Extended Frequency Range (3800MHz)

Model	Frequency (MHz)	Coupling Value	Power Rating (W)	Conn. Type	Ingress	PIM dBc (dBm)
CK-15KE	617-3800	15 dB	200	4.3-10	IP68	-161 (-118)
CK-16KE	617-3800	6 dB	200	4.3-10	IP68	-161 (-118)
CK-17KE	617-3800	10 dB	200	4.3-10	IP68	-161 (-118)
CK-18KE	617-3800	20 dB	200	4.3-10	IP68	-161 (-118)

### Low PIM Terminations – Standard Frequency Range (2700MHz)

Model	Description	Power Rating(W)	Conn. Type	Ingress	PIM* dBc (dBm)
TKE-205MD	400-2700	5	7-16	IP67	-149 (-115)
TKE-205ME	400-2700	5	4.3-10	IP67	-149 (-115)
TKE-210MD	400-2700	10	7-16	IP67	-152 (-115)
TKE-210ME	400-2700	10	4.3-10	IP67	-152 (-115)

\*PIM test conducted at de-rated power level in accordance with product maximum input power rating

### Reactive Splitters

Model	Frequency (MHz)	Ways	Loss	Power/ Input(W)	Conn. Type	Ingress	PIM dBc (dBm)
D2-84KFE	575-2700	2	3 dB	300	4.3-10	IP68	-161 (-118)
D3-84KFE	575-2700	3	4.8 dB	300	4.3-10	IP68	-161 (-118)
D4-84KFE	575-2700	4	6 dB	300	4.3-10	IP68	-161 (-118)
D2-83FE	617-5925	2	3 dB	300	4.3-10	IP67	-161 (-118)
D3-83FE	617-5925	3	4.8 dB	300	4.3-10	IP67	-161 (-118)
D4-83FE	617-5925	4	6 dB	300	4.3-10	IP67	-161 (-118)




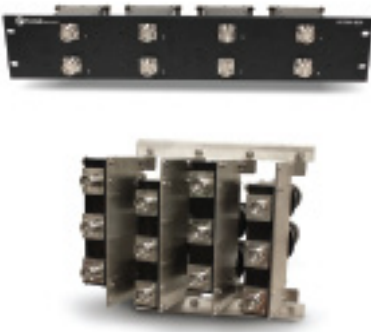

Microlab, a Wireless Telecom Group company, offers DCC Series™ integrated solutions to enable fast and efficient integration of passive and active components for In-Building Wireless, outdoor DAS, and Small Cell applications.

DCC Series™ integrated solutions support a wide variety of configurations including: Multi-Band / Multi-Operator Low-Loss Combining (Point-of-Interface) for DAS and Small Cell, Signal Conditioning for Active DAS Head-End applications, and customized integrated passive products for Small Cell & ODAS applications.

Microlab’s DCC platform utilizes our high performance components to provide a high level of integration and quality with guaranteed performance. Our solutions allow customers and integrators to optimize and simplify their designs, reduce installation and test time, and achieve higher performance along with faster time to market.

## Features

- Supports frequency bands from 130 MHz to 2700 MHz to address commercial DAS and Public Safety (VHF/UHF) wireless services
- Low Loss architecture for maximum RF Transmission
- Guaranteed Low PIM; available in latest 4.3-10 connector interface
- POI Power Levels up to 150W per port with high isolation
- Signal conditioning for 5W Small Cell or 60W RRU applications offering independent uplink and downlink variable attenuation for link budget optimization
- Monitor ports for uninterrupted system monitoring and dynamic system optimization
- High performance components and terminations - fully-tested to ensure spec compliance

Signal Conditioning	Small Cell Deployments	DAS Combiner/POI
		

### Digital Skytiming™ Benefits

- Allows GPS signals to be transmitted up to 10km from antenna to BTS/BBU
- New web-based interface provides remote system control and monitoring over Ethernet
- Monitors antenna status with automatic switch-over
- Redundant fiber optic links monitored with auto switch-over
- Provides communication delay within a 100 nanosecond alignment for LTE and LTE-A
- Reduces temperature sensitivity
- Detects the presence of interference or jamming
- Eliminates signal degradation
- Advanced intelligent SNMP alarms



#### GPSR400 - Outdoor Remote Unit

- Up to 4 GPS antenna inputs
- Wall-mounted NEMA-4 enclosure
- Redundant fiber optic links
- Loss of signal alarms
- LED system health monitors
- Ethernet local port
- Connects to GPSR116 Indoor Head-End Unit



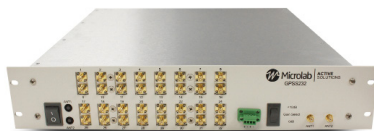
#### GPSR116 - Indoor Head-End Unit

- Up to 16 GPS RF outputs
- Redundant fiber optic links
- 1RU rack-mounted controller
- LED system health monitors
- Ethernet local port
- Connects to GPSR400 Outdoor Remote Unit



#### GPSS216 - GPS RF Signal Splitter

- Up to 16 GPS RF outputs
- 2 GPS antenna inputs
- GPS signal quality monitoring
- Compatible with GPSR116 Indoor Head-End Unit



#### GPSS232 - GPS RF Signal Splitter

- Up to 32 GPS RF outputs
- 2 GPS antenna inputs
- GPS signal quality monitoring
- Compatible with GPSR116 Indoor Head-End Unit

### GPS Repeater

Model	Description
GPSR116	GPS Repeater Head End, 16 RF Outputs, SMA Connectors
GPSR400	GPS Repeater Remote Unit, up to 4 GPS Antenna Inputs, 4.3-10 connector

### GPS Lossless Splitter

Model	Description
GPSS216	Lossless GPS signal splitter, 2 RF inputs, 16 RF outputs
GPSS232	Lossless GPS signal splitter, 2 RF inputs, 32 RF outputs
GPSS008-N	GPS Active Splitter 1 antenna input 8 GPS output N(f) 6dB gain
GPSS008-S	GPS Active Splitter 1 antenna input 8 GPS output SMA(f) 6dB gain

\*One port DC pass to antenna and powers internal LNA, the rest are DC terminated with 200 ohm

### GPS Jumpers

Model	Description
GPSJ-10-EMSM	1.0m, DC-6 GHz, .141, 4.3-10(m) to SMA(m)
GPSJ-20-NFSM	2.0m, DC-6 GHz, .141, N(f) to SMA(m)
GPSJ-30-SMSM	3.0m, DC-6 GHz, .141, SMA(m) to SMA(m)

### GPS/GNSS Passive Splitters with DC Pass/Termination

Model	Description
D2-42FN	2-way, 1100-1700 MHz, N(f), EN50155 Rail certified
D8-42FS	8-way, 1100-1650 MHz, SMA(f)

\* One port DC pass to antenna, the rest are DC terminated with 200 ohm

Learn more at: [microlabtech.com](http://microlabtech.com)

For more information about Microlab contact your local representative.  
Find a complete list here: [microlabtech.com/sales/](http://microlabtech.com/sales/)

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 **Wireless Telecom Group**

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Wireless Telecom Group Inc., comprised of Boonton Electronics, CommAgility, Holzworth, Microlab and Noisecom, is a global designer and manufacturer of advanced RF and microwave components, modules, systems and instruments. Serving the wireless, telecommunication, satellite, military, aerospace, semiconductor and medical industries, Wireless Telecom Group products enable innovation across a wide range of traditional and emerging wireless technologies. With a unique set of high-performance products including peak power meters, signal analyzers, signal generators, signal processing modules, LTE PHY and stack software, power splitters and combiners, GPS repeaters, public safety monitors, noise sources, and programmable noise generators, Wireless Telecom Group supports the development, testing, and deployment of wireless technologies around the globe.