

**Model TF9000 Series  
High Rejection Microwave Filters  
(for use with AR Worldwide Amplifiers)**

AR Worldwide offers a series of low-loss high-power microwave harmonic filters designed for use with specific TWTAs (Traveling Wave Tube Amplifiers) as well as specific solid-state amplifiers. The filters in this series are intended for applications requiring a significant level of rejection, up to 80 dB of harmonic rejection. These filters may be connected to the output of an amplifier to significantly reduce the level of harmonics supplied to a load. Harmonics are often a byproduct of high power broadband amplifiers using TWTs. These filters reduce the Noise Power Density level in specific non-operating frequency ranges above, and in some cases also below (identified as BP), their pass band frequency range.

All filters in this series are absorptive type, offering reduced VSWR in the primary harmonic reject band.

Contact AR Worldwide for filters for use with other AR TWTA products, and filters with less stringent harmonic rejection requirements.

Page 2 of this sheet shows a table listing the attributes of each filter type.

	TF9001	TF9002	TF9003	TF9004	TF9005	TF9006
<b>Filter Configuration &amp; Type, Power rated for use with AR Amplifier Model(s)</b> LP=low pass; BP=band pass	Coaxial Absorptive, LP, 250T1G3, 200S1G4	Coaxial Absorptive, LP, 250T1G3, 200S1G4	WRD 250 Absorptive, BP, 300T2G8, 200S1G4	WRD 250 Absorptive, BP, 300T2G8	WRD 250 Absorptive, BP, 300T2G8	WRD 250 Absorptive, BP, 300T2G8
<b>Pass Band Frequency Range</b>	1.0-1.6 GHz	1.6-2.5 GHz	2.5-4.2 GHz	4.2-5.75 GHz	5.75-7.5 GHz	6.5-8.0 GHz
<b>Insertion Loss in Pass Band</b>	1.0 dB max	1.0 dB max	0.75 dB Max.	0.75 dB Max.	0.75 dB Max.	0.75 dB Max.
<b>Rejection in Primary Rejection Frequency Bands</b>	80 dB from 2.0-6.4 GHz	80 dB from 3.0 - 7.5 GHz	80 dB at or below 2.0 GHz and 80 dB from 5.0 GHz to 8.4 GHz	80 dB at or below 3.36 GHz and 80 dB from 6.9 GHz to 11.5 GHz	80 dB at or below 4.6 GHz and 80 dB from 9 GHz to 15 GHz	80 dB at or below 5.2 GHz and 80 dB from 9.6 GHz to 16 GHz
<b>Rejection in Secondary Rejection Frequency Band</b>	60dB above 6.4 GHz up to 12GHz	60dB above 7.5 GHz up to 12GHz	70dB above 8.4GHz up to 12GHz			
<b>Input VSWR in Pass Band</b>	1.4:1 Goal, 1.7:1 Max	1.4:1 Goal, 1.7:1 Max	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.
<b>Input VSWR in Primary Harmonic Reject Band (typical)</b>	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1
<b>Forward Power at fundamental (watts, max)</b>	600	600	740	740	740	740
<b>Forward Power at 2nd Harmonic (watts, max)</b>	100	100	150	150	150	150
<b>Input Connector</b>	N(m)	N(m)	WRD-250-D30	WRD-250-D30	WRD-250-D30	WRD-250-D30
<b>Output Connector</b>	N(f)	N(f)	WRD-250-D30	WRD-250-D30	WRD-250-D30	WRD-250-D30
<b>Size (approximate)</b>	22"L x 5" W x 14" H	15"L x 3" W x 10" H	50"L, made in 3 sections with center 26"L and extending in height to 16" Max.	38"L, made in 3 sections with center 20"L and extending in height to 12" Max.	28"L, one piece construction with center 17"L and extending in height to 12" Max.	27"L, one piece construction with center 14"L and extending in height to 12" Max.
<b>Weight (approximate)</b>	11.3 kg (25 lbs)	9 kg (20 lbs)	22.7 kg (50 lbs)	18 kg (40 lbs)	9 kg (20 lbs)	9 kg (20 lbs)

	TF9007	TF9008	TF9009	TF9010	TF9011	TF9012
<b>Filter Configuration &amp; Type, Power rated for use with AR Amplifier Model(s)</b> LP=low pass; BP=band pass	WRD 750 Absorptive, BP, 250T8G18	WRD 750 Absorptive, BP, 250T8G18	WRD 750 Absorptive, BP, 250T8G18	WRD 750 Absorptive, BP, 250T8G18	WRD 750 Absorptive, BP, 250T8G18	WRD 750 Absorptive, BP, 250T8G18
<b>Pass Band Frequency Range</b>	7.5-9.0 GHz	9.0-10.0 GHz	10.0-11.0 GHz	11.0-12.0 GHz	12.0-14.0 GHz	14.0-18.0 GHz
<b>Insertion Loss in Pass Band</b>	0.75 dB Max.	0.75 dB Max.	0.75 dB Max.	0.75 dB Max.	0.75 dB Max.	0.75 dB Max.
<b>Rejection in Primary Rejection Frequency Bands</b>	80 dB at or below 6.0 GHz and 80 dB from 10.8 GHz to 16 Ghz	80 dB at or below 7.2 GHz and 80 dB from 12 GHz to 20 Ghz	80 dB at or below 8 GHz and 80 dB from 13.2 GHz to 22 Ghz	80 dB at or below 8.8 GHz and 80 dB from 14.4 GHz to 24 Ghz	80 dB at or below 9.6 GHz and 80 dB from 16.8 GHz to 28 Ghz	80 dB at or below 11.2 GHz and 80 dB from 21.6 GHz to 36 Ghz
<b>Rejection in Secondary Rejection Frequency Band</b>						
<b>Input VSWR in Pass Band</b>	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.	1.35:1 Typ., 1.4:1 Max.
<b>Input VSWR in Primary Harmonic Reject Band (typical)</b>	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1
<b>Forward Power at fundamental (watts, max)</b>	470	470	470	470	470	470
<b>Forward Power at 2nd Harmonic (watts, max)</b>	150	150	150	75	75	75
<b>Input Connector</b>	WRD-750-D24	WRD-750-D24	WRD-750-D24	WRD-750-D24	WRD-750-D24	WRD-750-D24
<b>Output Connector</b>	WRD-750-D24	WRD-750-D24	WRD-750-D24	WRD-750-D24	WRD-750-D24	WRD-750-D24
<b>Size (approximate)</b>	27"L, one piece construction with center 14"L and extending in height to 12" Max.	24"L, one piece construction with center 12"L and extending in height to 8" Max.	22"L, one piece construction with center 10"L and extending in height to 6" Max.	20"L, one piece construction with center 9"L and extending in height to 6" Max.	18"L, one piece construction with center 8"L and extending in height to 5.5" Max.	15"L, one piece construction with center 7"L and extending in height to 4.5" Max.
<b>Weight (approximate)</b>	9 kg (20 lbs)	7.3 kg (16 lbs)	6.8 kg (15 lbs)	5.5 kg (12 lbs)	4.6 kg (10 lbs)	3.7 kg (8 lbs)