

## Cutting Edge Technology Enabling Superior Wireless Performance

In Today's and Future Generation Wireless Networks ...



Today's competitive landscape presents many problems for wireless carriers: declining ARPUs, excessive churn, capacity constraints, and the high costs of spectrum. Superconductor Technologies' family of SuperFilter® systems provide solutions to all of these problems by applying our proprietary superconductor technology to minimize the trade off between selectivity and sensitivity.

SuperFilters® customers experience immediate increases in capacity and coverage while simultaneously experiencing reductions in dropped and blocked calls. Naturally, what follows is increased usage and revenues, and greater customer satisfaction and loyalty. Our solutions will become even more critical as customer expectations continue to rise in the 2.5G and 3G networks of the future.

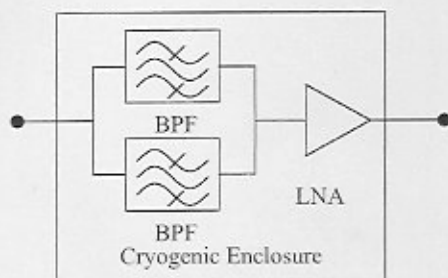
### Wireless Carrier

- Superior Network Quality
- Greater Customer Loyalty
- Increased MOU and ARPU

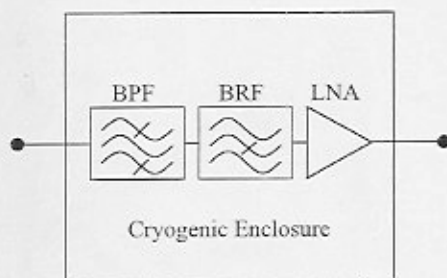
### Wireless Customer Benefits

- Improved Quality of Service
- Fewer Dropped and Blocked Calls
- Increased Battery Life

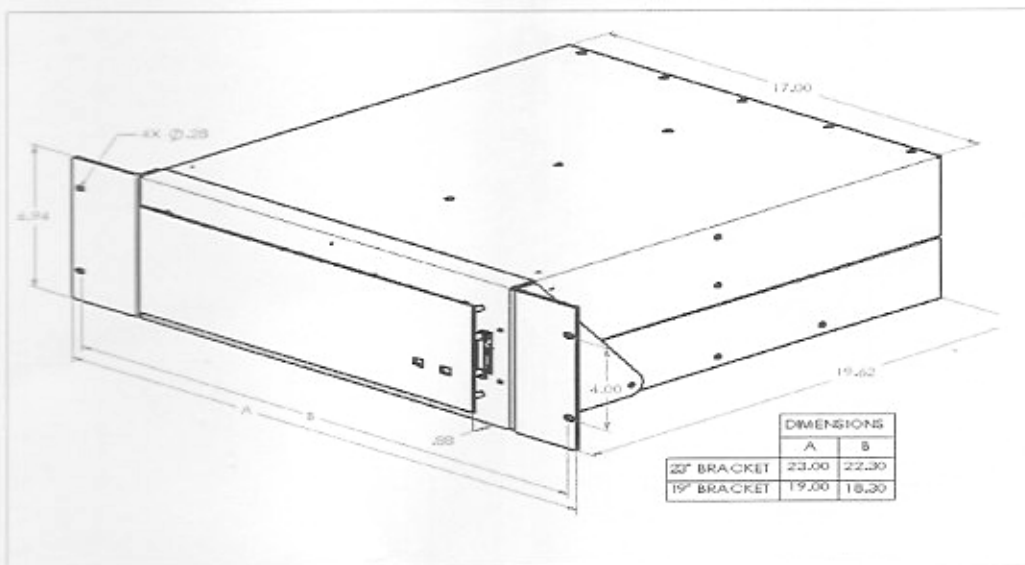
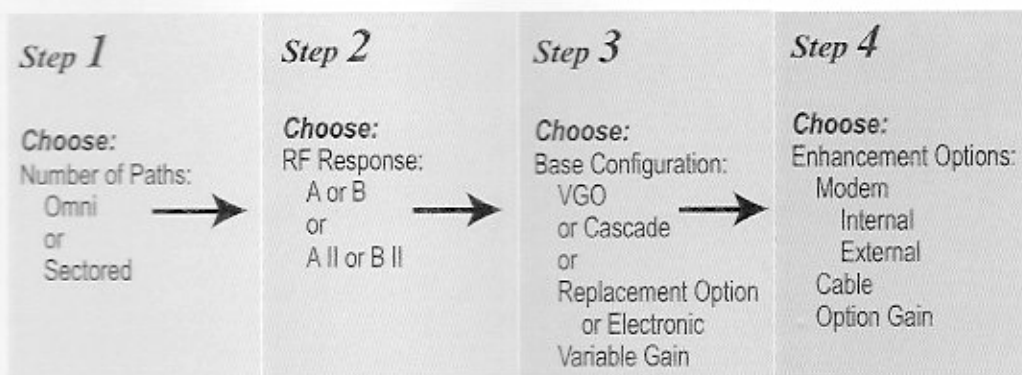
### Superfilter A & Superfilter II A



### Superfilter B & Superfilter II B



*Improving the quality of wireless ...  
Step by step instructions*



**Step 1**

**SPECIFICATIONS:**

	Omni	Sectored
<b>Characteristics</b>	Specified Limits 0 to 50° C	Specified Limits 0 to 50° C
Power@+27V	95 W Max operate @ 23C	125 W Max operate @ 23C
SuperFilter II Size	17" x 21.6" x 7"	17" x 21.6" x 7"
Weight	52 lbs.	53 lbs.
Max Passband Sig Level	-10 dBm	-10 dBm
Max Input Sig 869 - 894 MHz	+30 dBm	+30 dBm

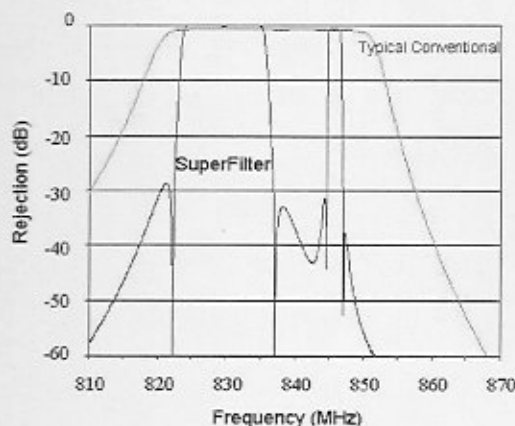
# SuperFilter®

## A-Band RF Performance

### SPECIFICATIONS

- Low noise and high rejection
- High Q HTS Filters
- Cryogenic Low Noise Amplifiers

Measured Rejection Performance  
(Referenced to Maximum Gain)



#### Passband 824 – 835 MHz and 845 – 846.5MHz

Characteristics	Typical Performance 0 to 50° C	Specified Limits 0 to 50° C
Noise Figure <sup>1</sup>	0.42 dB	0.5 Max
Gain <sup>2</sup>	12 dB	11.4 dB Min
VSWR <sup>2</sup>	1.5:1	1.75:1 Max
Output Third Order Intercept Point <sup>1,2</sup>	+30 dBm	+25 dBm Min
CDMA Performance-1.23 MHz channels- Primary and 6 adj.channels		
-Channel amp. ripple <sup>3</sup>	±0.1 dB	±0.15 dB Max
-Channel MSPE <sup>4</sup>	0.001rads <sup>2</sup>	0.0022 rads <sup>2</sup> Max

#### Stop Band Rejection

DC - 815 MHz (SMR) <sup>2</sup>	45 dB	40 dB Min
815 - 822.2 MHz (B-Band) <sup>2</sup>	30 dB	27 dB Min
837.2 - 844.5 MHz (B'-Band) <sup>2</sup>	35 dB	30 dB Min
847.1 - 869 MHz (SMR) <sup>2</sup>	35 dB	30 dB Min
869 - 894 MHz (Cellular Transmit) <sup>2</sup>	80 dB	65 dB Min

#### Notes:

<sup>1</sup> Measured at 829 MHz

<sup>2</sup> Measures with Pin = -20dBm

<sup>3</sup> Maximum deviation from average gain calculated over each 1.23 MHz CDMA Channel

<sup>4</sup> Mean square phase error

Performance data and specifications are subject to change without notice.

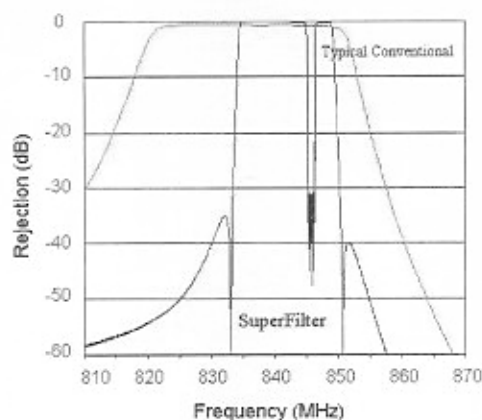
# SuperFilter®

## B-Band RF Performance

### SPECIFICATIONS

- Low noise and high rejection
- High Q HTS Filters
- Cryogenic Low Noise Amplifiers

Measured Rejection Performance  
(Referenced to Maximum Gain)



Passband 835 – 845 MHz and 846.5 – 849MHz

Characteristics	Typical Performance 0 to 50° C	Specified Limits 0 to 50° C
Noise Figure <sup>1</sup>	0.4 dB	0.55 dB Max
Gain <sup>2</sup>	12 dB	11.4 dB Min
VSWR <sup>2</sup>	1.6:1	1.8:1 Max
Output Third Order Intercept Point <sup>1,2</sup>	+30 dBm	+25 dBm Min
CDMA Performance-1.23 MHz channels- Primary and 5 adj.channels		
-Channel amp. ripple <sup>3</sup>	±0.1 dB	±0.15 dB Max
-Channel MSPE <sup>4</sup>	0.001rads <sup>2</sup>	0.0022 rads <sup>2</sup> Max

### Stop Band Rejection

DC - 833 MHz (SMR) <sup>2</sup>	38 dB	32 dB Min
845.25 - 846.25 MHz (A-Band) <sup>2</sup>	29 dB	23 dB Min
851 - 869 MHz (SMR) <sup>2</sup>	37 dB	35 dB Min
869 - 894 MHz (Cellular Transmit) <sup>2</sup>	70 dB	55 dB Min

Notes:

<sup>1</sup> Measured at 842 MHz

<sup>2</sup> Measures with Pin = -20dBm

<sup>3</sup> Maximum deviation from average gain calculated over each 1.23 MHz CDMA Channel

<sup>4</sup> Mean square phase error

Performance data and specifications are subject to change without notice.

# SuperFilter II<sup>®</sup>

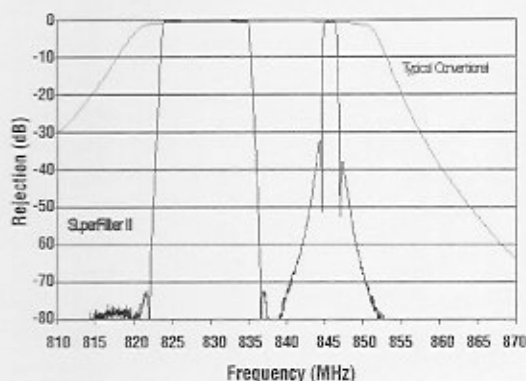
## A-Band RF Performance

Step 2

### SPECIFICATIONS

- Low noise and high rejection
- High Q HTS Filters
- Cryogenic Low Noise Amplifiers

Measured Rejection Performance  
(Referenced to Maximum Gain)



Passband 824 – 835 MHz and 845 – 846.5MHz

Characteristics	Typical Performance 0 to 50° C	Specified Limits 0 to 50° C
Noise Figure <sup>1</sup>	0.42 dB	0.5 Max
Gain <sup>2</sup>	12 dB	11.4 dB Min
VSWR <sup>2</sup>	1.5:1	1.75:1 Max
Output Third Order Intercept Point <sup>1,2</sup>	+30 dBm	+25 dBm Min
CDMA Performance-1.23 MHz channels- Primary and 6 adj.channels		
- Channel amp. ripple <sup>3</sup>	±0.1 dB	±0.15 dB Max
- Channel MSPE <sup>4</sup>	0.001rads <sup>2</sup>	0.0022 rads <sup>2</sup> Max

### Stop Band Rejection

DC - 822 MHz (SMR) <sup>2</sup>	70 dB	60 dB Min
837 - 842.5 MHz (B-Band) <sup>2</sup>	62 dB	60 dB Min
847.1 - 849 MHz (B'-Band) <sup>2</sup>	40 dB	30 dB Min
851 - 869 MHz (SMR) <sup>2</sup>	75 dB	70 dB Min
869 - 894 MHz (Cellular Transmit) <sup>2</sup>	85 dB	70 dB Min

Notes:

<sup>1</sup> Measured at 829 MHz

<sup>2</sup> Measures with Pin = -20dBm

<sup>3</sup> Maximum deviation from average gain calculated over each 1.23 MHz CDMA Channel

<sup>4</sup> Mean square phase error

Performance data and specifications are subject to change without notice.

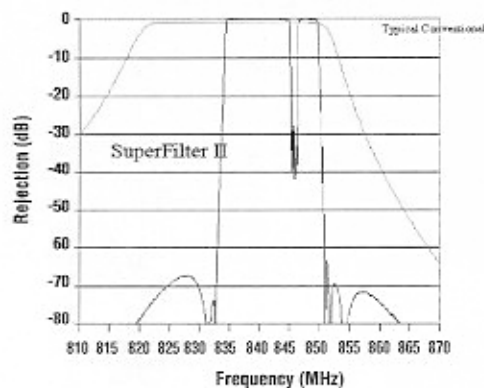
# SuperFilter II<sup>®</sup>

## B-Band RF Performance

### SPECIFICATIONS

- Low noise and high rejection
- High Q HTS Filters
- Cryogenic Low Noise Amplifiers

Measured Rejection Performance  
(Referenced to Maximum Gain)



Passband 835 – 845 MHz and 846.5 – 849MHz

Characteristics	Typical Performance 0 to 50° C	Specified Limits 0 to 50° C
Noise Figure <sup>1</sup>	0.42 dB	0.5 dB Max
Gain <sup>2</sup>	12 dB	11.4 dB Min
VSWR <sup>2</sup>	1.5:1	1.8:1 Max
Output Third Order Intercept Point <sup>1,2</sup>	+30 dBm	+25 dBm Min
CDMA Performance-1.23 MHz channels- Primary and 5 adj. channels		
- Channel amp. ripple <sup>3</sup>	±0.1 dB	±0.15 dB Max
- Channel MSPE <sup>4</sup>	0.001rads <sup>2</sup>	0.0022 rads <sup>2</sup> Max

#### Stop Band Rejection

DC - 832.8 MHz (A-Band) <sup>2</sup>	67 dB	60 dB Min
845.25 - 846.25 MHz (A-Band) <sup>2</sup>	30 dB	23 dB Min
851 - 869 MHz (SMR) <sup>2</sup>	63 dB	60 dB Min
869 - 894 MHz (Cellular Transmit) <sup>2</sup>	83 dB	70 dB Min

#### Notes:

<sup>1</sup> Measured at 842 MHz

<sup>2</sup> Measured with Pin = 20dBm

<sup>3</sup> Maximum deviation from average gain calculated over each 1.23 MHz CDMA Channel

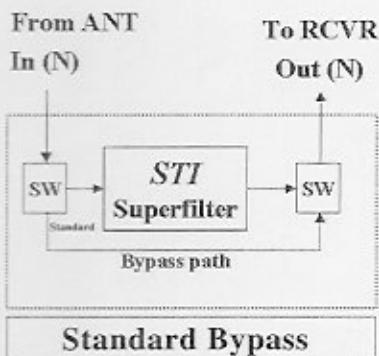
<sup>4</sup> Mean square phase error

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## SuperFilter® BASE OPTIONS

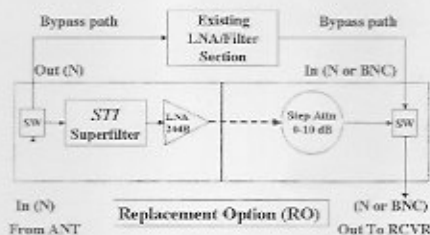
### STANDARD BYPASS

	Omni	Sector
Weight Change	2 lbs	4 lbs
Power Change @ 27V	17 Watts	50 Watts
Depth Change	3.6"	4.6"
<b>HTS MODE</b>		
Typical Perf. 20°C		
Specified Limits 0-50°C		
NF Change	0.23 dB	0.25 dB MAX
Gain Change	-0.47 dB	-0.5 dB MAX
Return Loss	34 dB	20 dB MIN
<b>OUTPUT SECTION BYPASS MODE</b>		
Typical Perf. 20°C		
Specified Limits 0-50°C		
Gain	-0.34 dB	-0.5 dB MAX
Return Loss	28 dB	20 dB MIN



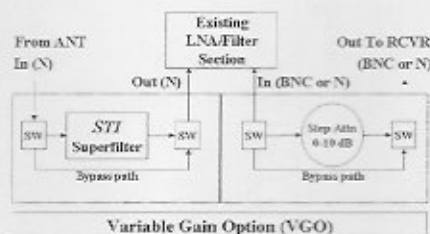
### RO

	Omni	Sector
Weight Change	4 lbs	8 lbs
Power Change @ 27V	29 Watts	87 Watts
Depth Change	4.6"	4.6"
<b>HTS MODE</b>		
Typical Perf. 20°C		
Specified Limits 0-50°C		
NF Change	0.3 dB	0.35 dB MAX
Gain Change <sup>1</sup>	+23.5 dB	+23 to +24.5 dB MAX
OIP3 <sup>1</sup>		+39 dB MIN
Gain Adjustment Range	0 to -10 dB	0 to -10 dB
Gain Step Size	1 dB +/- 0.2 dB	1 dB +/- 0.3 dB
Input Return Loss	23 dB	14 dB MIN
Output Return Loss	21 dB	14 dB MIN



### VGO

	Omni	Sector
Weight Change	4 lbs	8 lbs
Power Change @ 27V	34 Watts	100 Watts
Depth Change	4.6"	4.6"
<b>HTS MODE</b>		
Typical Perf. 20°C		
Specified Limits 0-50°C		
NF Change	0.23 dB	0.25 dB MAX
Gain Change	-0.47 dB	-0.5 dB MAX
Return Loss	34 dB	20 dB MIN
<b>OUTPUT SEC. HTS MODE</b>		
Typical Perf. 20°C		
Specified Limits 0-50°C		
Gain	-0.56 dB	-0.8 dB MAX
Atten. Adj. Range	0 to -10 dB	0 to -10 dB
Atten. Step Size	1 dB +/- 0.2 dB	1 dB +/- 0.3 dB
Return Loss	18 dB	17 dB MIN



<b>INPUT SECTION BYPASS MODE</b>		
	Typical Perf. 20°C	Specified Limits 0-50°C
Gain	-0.15 dB	-0.25 dB
Return Loss	40 dB	20 dB MIN
<b>OUTPUT SECTION BYPASS MODE</b>		
	Typical Perf. 20°C	Specified Limits 0-50°C
Gain	-0.15 dB	-0.25 dB
Return Loss	40 dB	20 dB MIN

<b>INPUT SECTION BYPASS MODE</b>		
	Typical Perf. 20°C	Specified Limits 0-50°C
Gain	-0.34 dB	-0.5 dB MAX
Return Loss	28 dB	20 dB MIN
<b>OUTPUT SECTION BYPASS MODE</b>		
	Typical Perf. 20°C	Specified Limits 0-50°C
Gain	-0.43 dB	-0.5 dB MAX
Return Loss	21 dB	20 dB MIN

<sup>1</sup>Measured at atten of 0 dB

# Step 4

## ENHANCE YOUR SUPERFILTER® WITH THE FOLLOWING OPTIONS

	Typical Performance 25° C	Specified Limits 0 to 50° C
<b>Internal Modem</b>		
Weight Change	1 lb.	NA
Power Change	10 W	12 W Max
<b>External Modem</b>		
Weight Change	2.5 lbs.	NA
Power @ 110V	10 W	12 W Max
Cables		See the Factory
<b>Additional Gain</b>		
Weight Change	3.5 lbs.	3.5 lbs.
NF Change	0.1 dB	0.2 dB Max
Power Change	19 W	20 W
Gain Change	0-12 dB	0-12 dB

### ORDERING INFORMATION

Model Number	Description
850A2RB20	SuperFilter A - Omni with Standard Bypass
850A6RB60	SuperFilter A - Sectedored with Standard Bypass
850B2RB20	SuperFilter B - Omni with Standard Bypass
850B6RB60	SuperFilter B - Sectedored with Standard Bypass
850S2B2RB20	SuperFilter II B - Omni with Standard Bypass
850S2B6RB60	SuperFilter II B - Sectedored with Standard Bypass
* 850A2RR23	SuperFilter A - Omni with Replacement Option
850A6RR63	SuperFilter A - Sectedored with Replacement Option
850B2RR23	SuperFilter B - Omni with Replacement Option
850B6RR63	SuperFilter B - Sectedored with Replacement Option
850S2B2RR23	SuperFilter II B - Omni with Replacement Option
850S2B6RR63	SuperFilter II B - Sectedored with Replacement Option
* 850A2RV20	SuperFilter A - Omni with Variable Gain Option Bypass
850A6RV60	SuperFilter A - Sectedored with Variable Gain Option Bypass
850B2RV20	SuperFilter B - Omni with Variable Gain Option Bypass
850B6RV60	SuperFilter B - Sectedored with Variable Gain Option Bypass
850S2B2RV20	SuperFilter II B - Omni with Variable Gain Option Bypass
850S2B6RV60	SuperFilter II B - Sectedored with Variable Gain Option Bypass
850B2RG12	SuperFilter B - Omni with Extra Gain Option