



## Duplexers for VHF band

Model	Short description	Frequency separation TX-RX, MHz	Band, MHz
DPS5-4V	Bandpass duplexer, 4 cavities, 5", BP=300kHz, 1 dB, -55 dB	4	140-174
DPS5-6V	Bandpass duplexer, 6 cavities, 5", BP=370kHz, 1.5 dB, -63 dB	2	140-174
DPS8-4V	Bandpass duplexer, 4 cavities, 8", BP=300kHz, 1 dB, -60 dB	3,5	140-174
DPS8-6V	Bandpass duplexer, 6 cavities, 8", BP=370kHz, 1.5 dB, -75 dB	1,5	140-174
DPR5-4V	Pass/reject duplexer, 4 cavities diam. 5", -1,5 dB, -75 dB, 200 W	0,6	140-174
DPR5-6V	Pass/reject duplexer, 6 cavities diam. 5", -2 dB, -95 dB, 200 W	0,4	140-174
DPR4Q-4V	Pass/reject duplexer, 4 cavities 4"x4", -1,5 dB, -75 dB, 200 W	0,6	140-174
DPR4Q-6V	Pass/reject duplexer, 6 cavities 4"x4", -2 dB, -95 dB, 200 W	0,6	140-174
DPRE4Q-4V	Pass/reject ekonom, 4 cavities 4"x4", -1,45 dB, -78 dB, 300 W	0,6	140-174
DPRE4Q-6V	Pass/reject ekonom, 6 cavities 4"x4", -1,7 dB, -97 dB, 300 W	0,6	140-174
DPR8-4V	Pass/reject duplexer, 4 cavities diam. 8", -1,5 dB, -85 dB, 250 W	0,5	140-174
DPR8-6V	Pass/reject duplexer, 6 cavities diam. 8", -2,2 dB, -100 dB, 250 W	0,275	140-174
DPRE5-4VL	Pass/reject ekonom., 4 cavities diam. 5", -1,45 dB, -78 dB, 300 W	0,6	140-160
DPRE5-4VH	Pass/reject ekonom, 44 cavities diam. 5", -1,45 dB, -78 dB, 300 W	0,6	152-174
DPRE5-6VL	Pass/reject ekonom, 6 cavities diam. 5", -1,7 dB, -97 dB, 300 W	0,4	140-160
DPRE5-6VH	Pass/reject ekonom, 6 cavities diam. 5", -1,7 dB, -97 dB, 300 W	0,4	152-174
DPF5-3V	Narrowband duplexer, 3 cavities diam. 5", -1 dB, -35/-70 dB, 200 W	5	140-174
DPF5-4V	Narrowband duplexer, 4 cavities diam. 5", -1 dB, -55 dB, 200 W	4	140-174
DPF5-6V	Narrowband duplexer, 6 cavities diam. 5", -1,5 dB, -63 dB, 200 W	2	140-174
DPF8-4V	Narrowband duplexer, 4 cavities diam. 8", -2 dB, -55 dB, 200 W	3,5	140-174
DPF8-6V	Narrowband duplexer, 6 cavities diam. 8", -1,5 dB, -63 dB, 200 W	1,5	140-174
MDF-6VM	Mobile duplexer, 6 cavities, reject, -0,9 dB, -75 dB, 50 W	24	148-149/171-173
MDF-6VL4,5/6	Mobile duplexer, 6 cavities, reject, -1,3 dB, -90 dB, 50 W	4,5-6	140-156
MDF-6VL6/8	Mobile duplexer, 6 cavities, reject, -1,3 dB, -90 dB, 50 W	6-8	140-156
MDF-6VL8/10	Mobile duplexer, 6 cavities, reject, -1,3 dB, -90 dB, 50 W	8-10	140-156
MDF-6VH4,5/6	Mobile duplexer, 6 cavities, reject, -1,3 dB, -90 dB, 50 W	4,5-6	156-172
MDF-6VH6/8	Mobile duplexer, 6 cavities, reject, -1,3 dB, -90 dB, 50 W	6-8	156-172
MDF-6VH8/10	Mobile duplexer, 6 -1,3 dB, -90 dB, 50 W cavities, reject,	8-10	156-172
MDF-6VH-15	Mobile duplexer, 6 cavities, reject, -1,3 dB, -90 dB, 50 W	10-15	147-168
MDF2-6V	Mobile duplexer, 6 cavities, reject 2", -0.8 dB, -80 dB, 100 W	2,5-4,5	146-156



# 140-174 MHz Band Pass Duplexer DPS5-4V, DPS5-6V

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DPS5-4V



DPS5-6V



### Electrical specifications

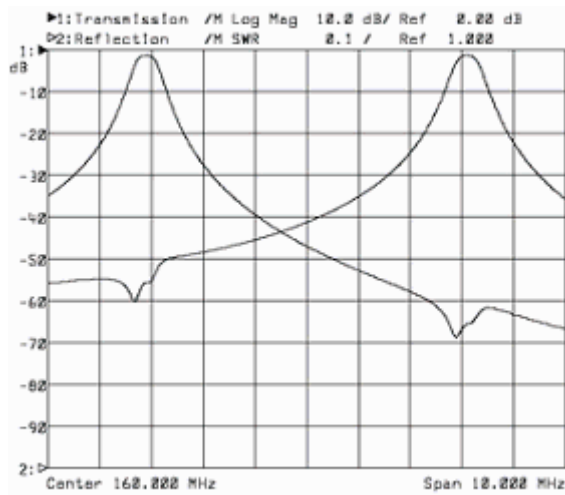
Model	DPS5-4V	DPS5-6V
Operating frequency band, MHz		140-174
Insertion loss (adjustable) not more, dB	1	1,5
Frequency separation TX/RX (min), MHz		5
Band pass, kHz	300	370
Impedance, Ohm		50
Isolation, not less, dB	55	70
VSWR, not more than		1,5
Input power, not more, W		300
Temperature range, °C		from -30 to +60
Cavity electrical length		1/4λ

### Mechanical specifications

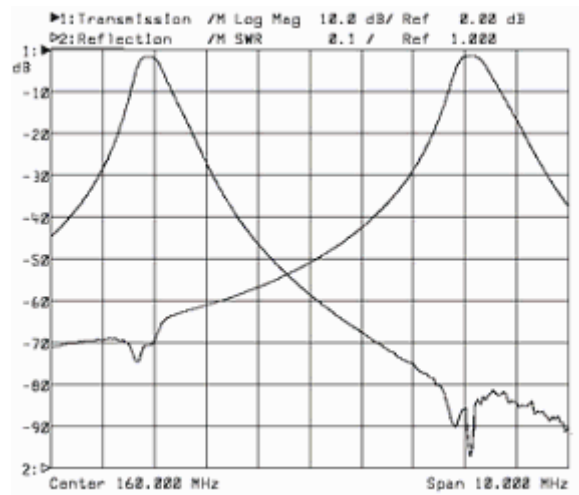
Model	DPS5-4V	DPS5-6V
Diameter, mm (ins.)		128 (5")
Weight, kg	8,45	12,35
Connector		N-female
Mount to 19-inch rack		yes
Length/Width/Depth, mm		800x480x265

It is become essential frequently while constructing multichannel sites to combine transmitter band and receiver band into one antenna. "DPS" series bandpass duplexer can handle this task. In DPS5-4V and DPS5-6V each arm represents two- or three-jar 5" coaxial resonator preselector. DPS5-6V duplexer provides wider transmitting and receiving bandwidth, than DPS5-4V.

### Typical duplexers response curves



DPS5-4V



DPS5-6V



## 140-174 MHz Band Pass Duplexer DPS8-4V, DPS8-6V

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DPS8-4V



DPS8-6V



### Electrical specifications

Model	DPS8-4V	DPS8-6V
Operating frequency band, MHz		140-174
Insertion loss (adjustable) not more, dB	1,5	2
Frequency separation TX/RX (min), MHz	3,5	1,5
Band pass, kHz	300	370
Impedance, Ohm		50
Isolation, not less, dB	60	75
VSWR, not more than		1,5
Input power, not more, W		300
Temperature Range, °C		from -30 to +60
Cavity electrical length		1/4λ

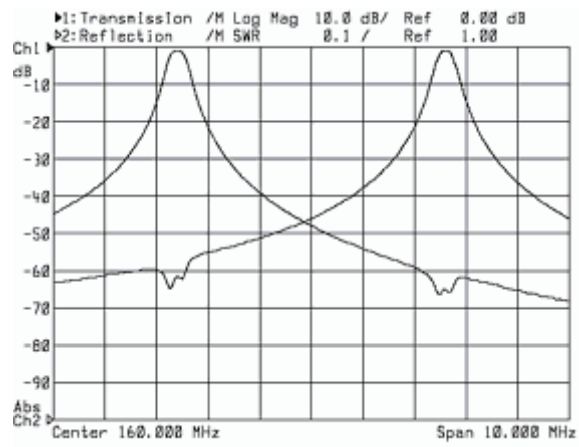
### Mechanical specifications

Model	DPS8-4V	DPS8-6V
Diameter, mm (ins.)		206 (8")
Weight, kg	14	21,3
Connector		N-female
Mount to 19-inch rack		yes
Length/Width/Depth, mm	800x480x420	1600x480x420

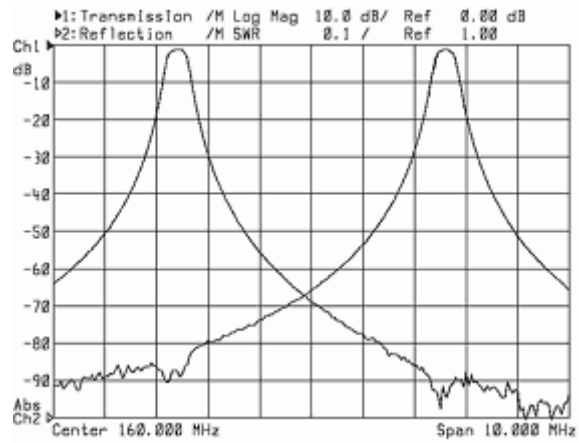
Constructing multichannel sites it is become essential frequently to combine transmitter band and receiver band into one antenna. "DPS" series bandpass duplexer can handle this task. In DPS8-4V and DPS8-6V each arm represents two- or three-jar 5" coaxial cavity preselector. DPS8-6V duplexer provides wider transmitting and receiving bandwidth, than DPS8-4V.

## Typical duplexers response curves

### DPS8-4V



### DPS8-6V





## 140-174 MHz Pass/reject duplexer DPR5-4V, DPR5-6V

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DPR5-4V



DPR5-6V



### Electrical specifications

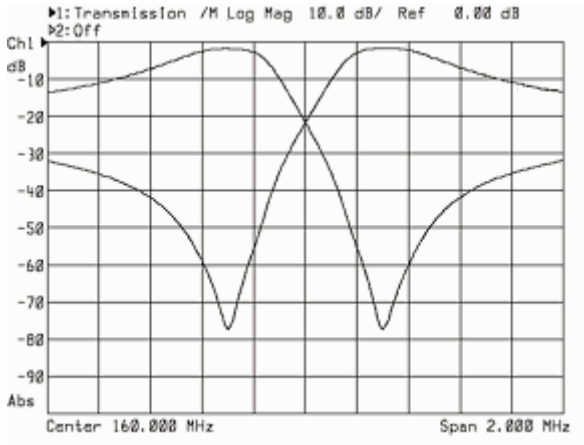
Model	DPR5-4V	DPR5-6V
Operating Frequency band, MHz		140-174
Insertion loss (adjustable) not more, dB	1,5	2
Frequency separation TX/RX (min), MHz	0,6	0,4
Impedance, Ohm		50
Isolation, not less, dB	75	80
VSWR, not more than		1,5
Input power, not more, W		not more than 300
Temperature range, °C		from -30 to +60
Cavity electrical length		1/4λ

### Mechanical specifications

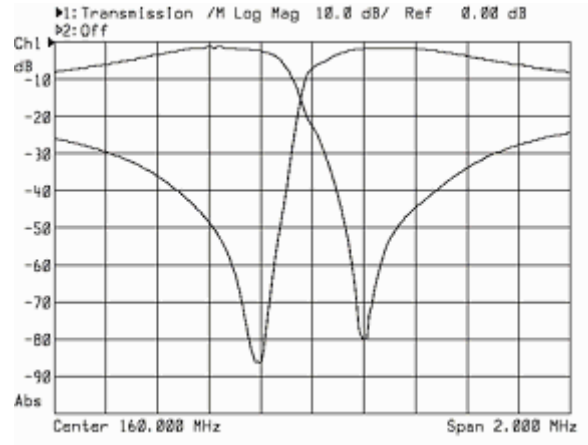
Model	DPR5-4V	DPR5-6V
Diameter, mm (ins.)		128 (5")
Weight, kg	8,7	12,7
Connector		N-female
Mount to 19-inch rack		yes
Length/Width/Depth, mm		800x480x265

Duplexer DPR5-4V is assembled from common 5" cavities by band pass-reject scheme, enabling to use this duplexer in variety of installations, whether it is full duplex repeater or two radio stations operating with one antenna. Three adjustment levels provide opportunity for precise pass and rejection frequency tuning, and VSWR, loss level and gain slope tuning, also. Implemented temperature compensating techniques enable to use the device in not heated locations (garrets, television and radio towers top decks, etc.). Duplexer attachment points enable to mount it into standard 19-inch repeater wrack. Duplexer DPR5-6V has higher characteristics at corresponding loss.

### Typical duplexers response curves



**DPR5-4V**



**DPR5-6V**

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# 140-174 MHz Pass/reject duplexer DPR4Q-4V, DPR4Q-6V DPRE4Q-4V, DPRE4Q-6V

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DPR4Q-4V



DPRE4Q-6V



### Electrical specifications

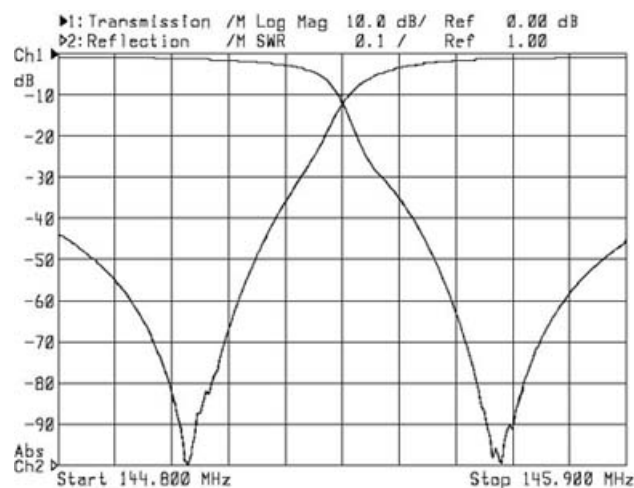
Model	DPR4Q-4V	DPR4Q-6V	DPRE4Q-4V	DPRE4Q-6V
Operating Frequency band, MHz	140-174	140-174	140-174	140-174
Insertion loss (adjustable) not more, dB	1.5	2	1.5	2
Frequency separation TX/RX (min), MHz	0.8	0.6	0.8	0.6
Impedance, Ohm	50	50	50	50
Isolation, not less, dB	75	80	75	80
VSWR, not more than	1.5	1,5	1.5	1.5
Input power, not more, W			not more than 200	
Temperature range, °C			from -30 to +60	
Cavity electrical length	1/4λ	1/4λ	1/4λ	1/4λ

### Mechanical specifications

Model	DPR4Q-4V	DPR4Q-6V	DPRE4Q-4V	DPRE4Q-6V
Diameter, mm (ins.)	4"x4"	4"x4"	4"x4"	4"x4"
Weight, kg	15.2	23	14.9	22.7
Connector	N-female	N-female	N-female	N-female
Mount to 19-inch rack	yes	yes	yes	yes
Length/Width/Depth, mm	800x480x315	800x480x315	800x480x350	800x480x350

### Typical duplexers response curves

#### DPR4Q-6V





# 140-174 MHz Pass/reject duplexer DPR8-4V, DPR8-6V

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DPR8-4V



DPR8-6V



### Electrical specifications

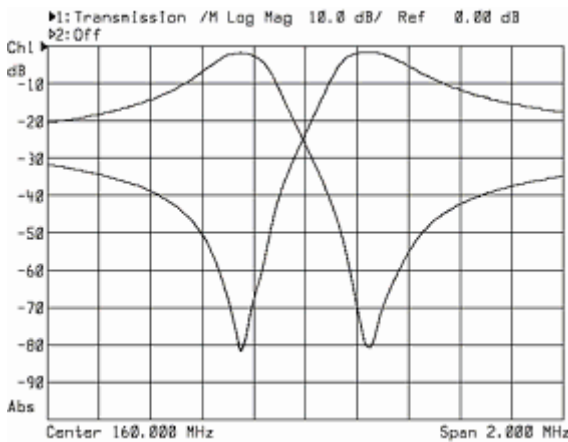
Model	DPR8-4V	DPR8-6V
Operating Frequency band, MHz		140-174
Insertion loss (adjustable) not more, dB	1,5	2,2
Frequency separation TX/RX (min), MHz	0,5	0,275
Impedance, Ohm		50
Isolation, not less, dB	80	95
VSWR, not more than		1,5
Input power, not more, W		not more than 300
Temperature Range, °C		from -30 to +60
Cavity electrical length		1/4λ

### Mechanical specifications

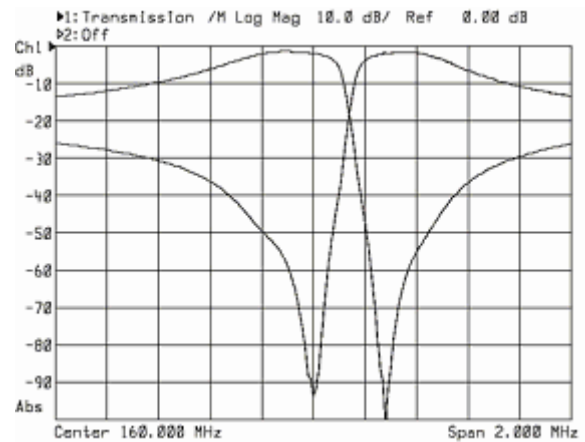
Model	DPR8-4V	DPR8-6V
Diameter, mm (ins.)		206 (8")
Weight, kg	14,2	21,7
Connector		N-female
Mount to rack	yes	yes
Length/Width/Depth, mm	800x480x420	1600x480x420

Duplexer DPR8-4V assembled from high-Q 8-inch diameter cavities by band pass-reject scheme. It has three level of adjustment: frequency, separation TX/RX value, rejection and pass level. It's designed to provide full-duplex operation for one antenna of repeater or radio station with high power output. Used commonly under nonstandard frequency separation conditions. Implemented temperature compensating (thermostable) techniques enable to use the device in not heated locations. Duplexer attachment points enable to mount it into standard 19-inch repeater rack. DPR8-4(6)V provides duplex operation at lower frequency separation, unlike duplexers assembled on 5-inch cavities

### Typical duplexers response curves



DPR8-4V



DPR8-6V



## 140-174 MHz Economic pass/reject duplexers

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### DPRE5-4VL, DPRE5-4VH, DPRE5-6VL, DPRE5-6VH

DPRE5-4V



DPRE5-6V



#### Electrical specifications

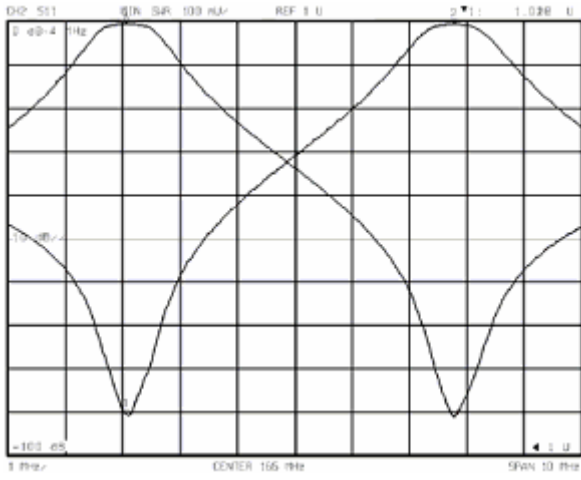
Model	DPRE5-4VL	DPRE5-4VH	DPRE5-6VL	DPRE5-6VH
Operating Frequency band, MHz	140-160	152-174	140-160	152-174
Insertion loss (adjustable) not more, dB	1.45	1.45	1.7	1.7
Frequency separation TX/RX (min), MHz	0.6	0.6	0.4	0.4
Impedance, Ohm	50	50	50	50
Isolation, not less, dB	78	78	97	97
VSWR, not more than	1.5	1,5	1.5	1.5
Input power, not more than, W	300	300	300	300
Temperature Range, °C	from -30 to +60	from -30 to +60	from -30 to +60	from -30 to +60
Cavity electrical length	1/4 $\lambda$	1/4 $\lambda$	1/4 $\lambda$	1/4 $\lambda$

#### Mechanical specifications

Model	DPRE5-4VL	DPRE5-4VH	DPRE5-6VL	DPRE5-6VH
Diameter, mm (ins.)	128 (5")	128 (5")	128 (5")	128 (5")
Weight, kg	8.5	8.5	12.2	12.2
Connector	N-female	N-female	N-female	N-female
Mount to 19-inch rack	present	present	present	present
Length/Width/Depth, mm	800x480x265	800x480x265	800x480x265	800x480x265

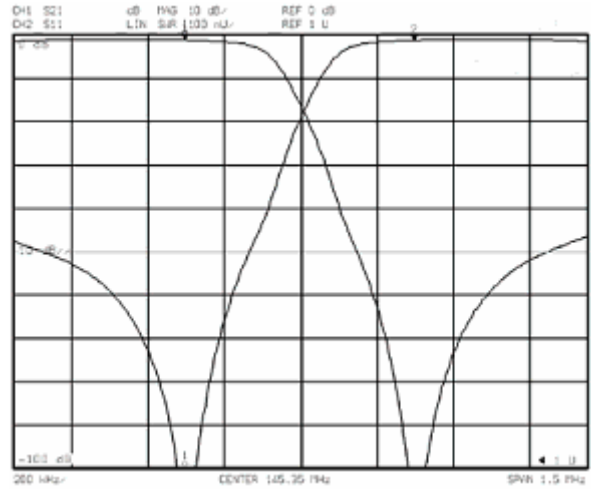
These new economic models distinguish from the traditional band reject duplexers as the coaxial tripling elements are changed by the whole-soldered nodes. The filter has a construction that ensures a high thermo-stability due to Invar alloy. A high quality-factor of each cavity is provided by means of application of the pure electro-technical copper and by the silvering of the contacting parts. An adjusting is being implemented on the modern network spectrum analyzers manufactured by Agilent Technologies and Rohde&Schwartz.

Typical duplexers response curves



DPRE5-4VH

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DPRE5-6VL



## 140-174 MHz Narrowband duplexers DPF5- 3V, DPF5-4V, DPF5-6V

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DPF5-3V



DPF5-4V



DPF5-6V



### Electrical specifications

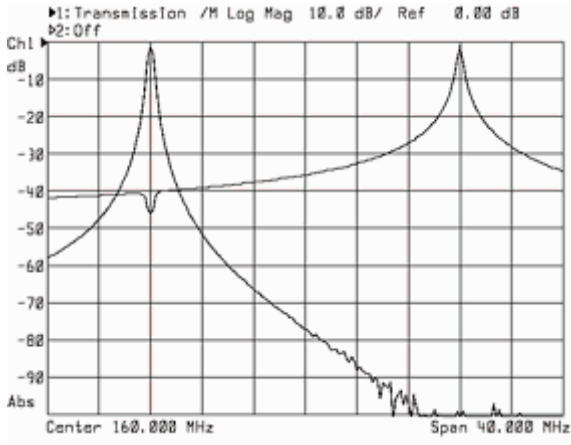
Model	DPF5-3V	DPF5-4V	DPF5-6V
Operating Frequency band, MHz		140-174	
Insertion loss (adjustable) not more, dB	1	1	1,5
Frequency separation TX/RX (min), MHz	5	4	2
Impedance, Ohm		50	
Isolation, not less, dB	35/70	55	63
VSWR, not more than		1,5	
Input power, not more, W		not more than 300	
Temperature Range, °C		from -30 to +60	
Cavity electrical length		1/4λ	

### Mechanical specifications

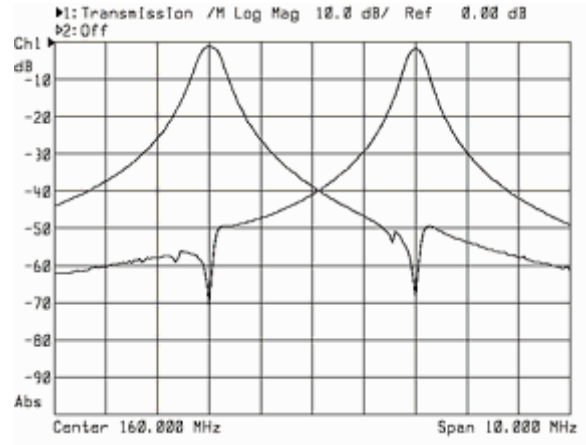
Model	DPF5-3V	DPF5-4V	DPF5-6V
Diameter, mm (ins.)		128 (5")	
Weight, kg	6,5	8,45	12,35
Connector		N-female	
Mount to 19-inch rack		yes	
Length/Width/Depth, mm	800x480x138		800x480x265

It is more effective to use bandpass duplexers, which cavities are tuned to pass receiver frequencies (in receiver circuit) and transmitter frequencies (in transmitter circuit), instead of band pass-reject duplexers at considerable receiving and transmission frequency separation. Having higher filtration capability, duplexer DPF5-4(6)V will handle out-of-band emission attenuation better. These duplexers classical application is two militia radio stations 148 and 172 MHz combination. In the last case triple-cavity duplexer DPF5-3V is applicable.

### Typical duplexers response curves

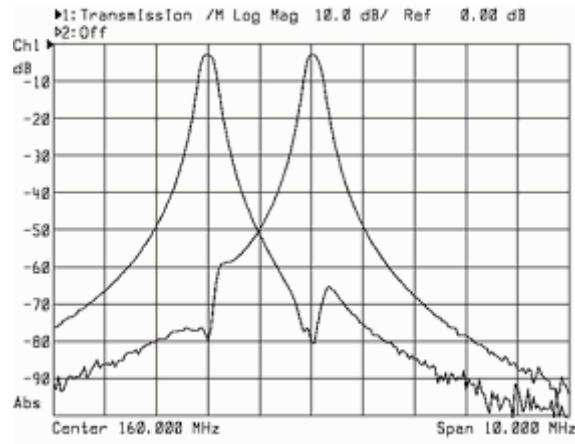


DPF5-3V



DPF5-4V

DPF5-6V





# 140-174 MHz Narrowband duplexers DPF8-4V, DPF8-6V

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DPF8-4V



DPF8-6V



### Electrical specifications

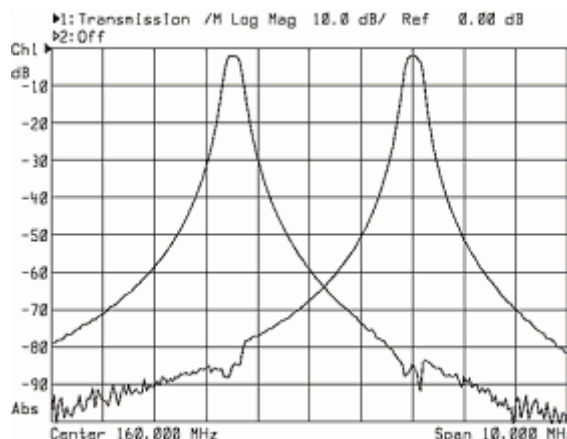
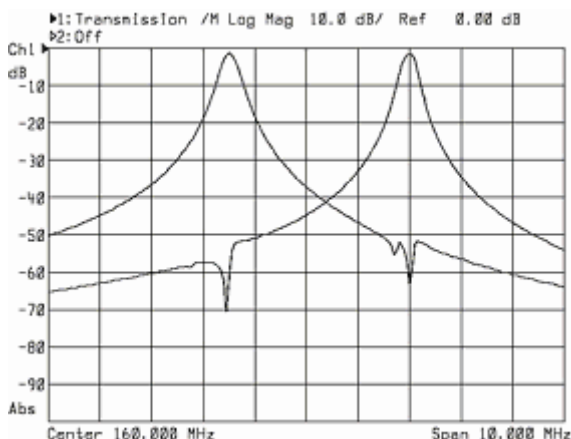
Model	DPF8-4V	DPF8-6V
Operating Frequency band, MHz		140-174
Insertion loss (adjustable) not more, dB	1,5	2
Frequency separation TX/RX (min), MHz	3,5	1,5
Impedance, Ohm		50
Isolation, not less, dB	55	63
VSWR, not more than		1,5
Input power, not more, W		not more than 300
Temperature Range with garanted stabilization, °C		from -30 to +60
Cavity electrical length		1/4 λ

### Mechanical specifications

Model	DPF8-4V	DPF8-6V
Diameter, mm (ins.)		206 (8")
Weight, kg	14	21,3
Connector		N-female
Mount to 19-inch rack	yes	yes
Length/Width/Depth, mm	800x480x420	800x650x420

8-inch cavities with higher Q-factor are used when duplexer, assembled on 5-inch cavities, unable to provide appropriate isolation because of low frequency separation TX/RX. Increase in the number of cavities (in duplexer DPF8-6V case) leads to gain slope increase and to decrease of receiver desensitization.

### Typical duplexers response curves





**140-156 MHz  
Mobile duplexers MDF-6VM,  
MDF-6VL4.5/6  
MDF-6VL6/8, MDF-6VL8/10,**

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Electrical specifications

Model	MDF-6VM	MDF-6VL4.5/6	MDF-6VL6/8	MDF-6VL8/10
Operating Frequency band, MHz	148-149/171-173	140-156	140-156	140-156
Insertion loss (adjustable) not more, dB	0,9	1,3	1.3	1.3
Frequency separation TX/RX (min), MHz	24	4,5-6	6-8	8-10
Impedance, Ohm	50	50	50	50
Isolation, not less, dB	75	80	80	80
Typical isolation, dB	80	90	90	90
VSWR, not more than	1.5	1.5	1.5	1.5
Input power, not more than, W	50	50	50	50
Temperature Range, °C	from -30 to +50	from -30 to +50	from -30 to +50	from -30 to +50

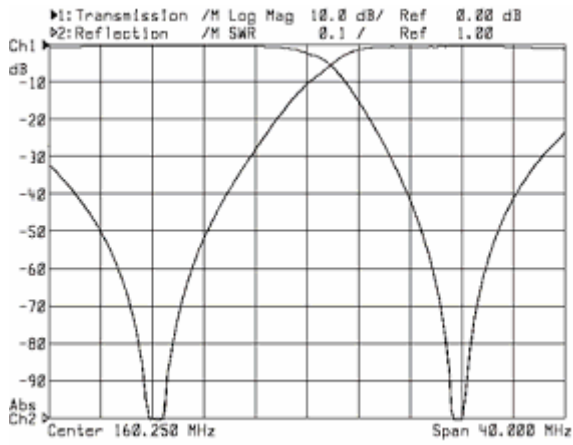
Mechanical specifications

Model	MDF-6VM	MDF-6VL4.5/6	MDF-6VL6/8	MDF-6VL8/10
Weight, kg	0,885	0,885	0,885	0,885
Connector	N-female	N-female	N-female	N-female
Length/Width/Depth, mm	210x156x32	210x156x32	210x156x32	210x156x32

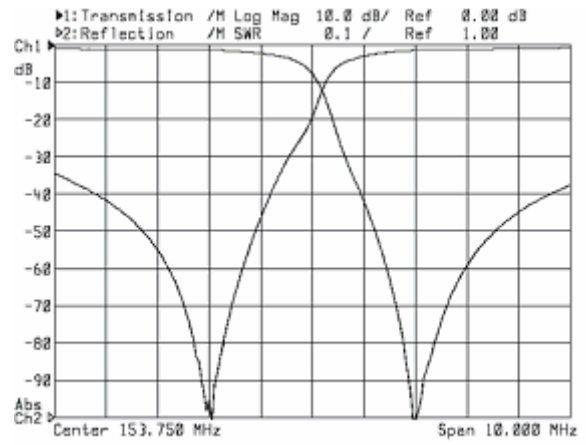
Availability of full duplex mobile radio stations on the market has initiated strong interest in duplex filters providing simultaneous operation of mobile station into common antenna. We are producing such devices now. These are mobile duplex filters MDF-6V and MDF-6VM for VHF range applicable to telecommunications networks operating in 148/172 MHz frequency range. Compact mobile duplexers are manufactured using six-section helical resonators by rejection design. At frequency separation of 4-6 MHz (MDF-6VL4.5/6), 6-8 MHz (MDF-6VL6/8), 8-10 MHz (MDF-6VL8/10) and 24 MHz (MDF-6VM) they provide full duplex operation mode of mobile radio stations at minimum loss and standard power output of 50 Watt. Dimensions of MDF-6V duplexer allow its mounting into the same case with radio station. However, one should notice, that such duplexers are ineffective, when implemented in base stations or at the sites with compromised electromagnetic compatibility.

### Typical duplexers response curves

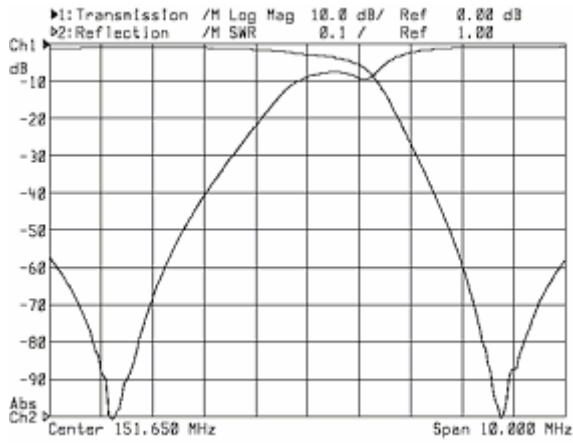
**MDF-6VM**



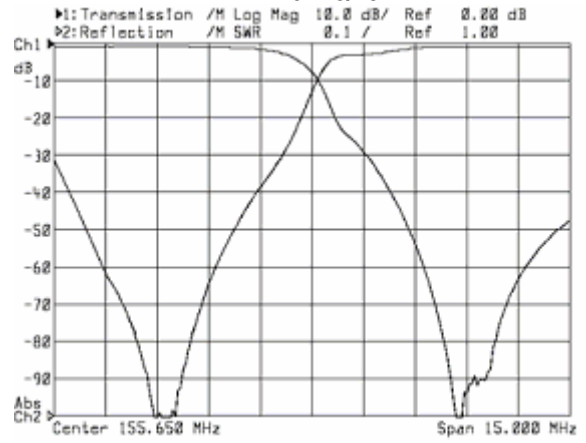
**MDF-6VL4.5/6**



**MDF-6VL6/8**



**MDF-6VL8/10**





## 156-172 MHz Mobile duplexers MDF- 6VH4.5/6, MDF-6VH6/8, MDF-6VH8/10, MDF-6VH-15

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### Electrical specifications

Model	MDF-6VH4.5/6	MDF-6VH6/8	MDF-6VH8/10	MDF-6VH-15
Operating Frequency band, MHz	156-172	156-172	156-172	147-168
Insertion loss (adjustable) not more, dB	1.3	1.3	1.3	1.3
Frequency separation TX/RX (min), MHz	4.5-6	6-8	8-10	15
Impedance, Ohm	50	50	50	50
Isolation, not less, dB	80	80	80	80
Typical isolation, dB	90	90	90	90
VSWR, not more than	1.5	1.5	1.5	1.5
Input power, not more than, W	50	50	50	50
Temperature Range, °C	from -30 to +50	from -30 to +50	from -30 to +50	from -30 to +50

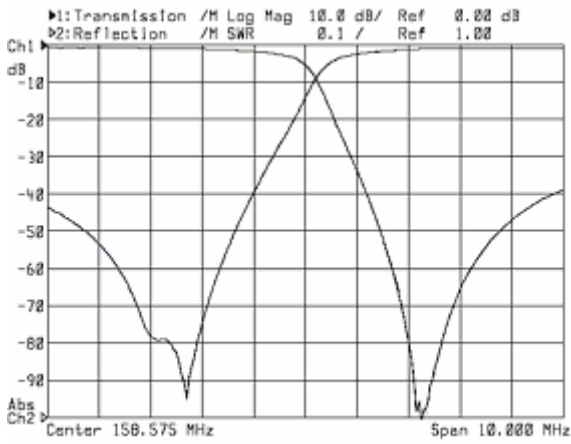
### Mechanical specifications

Model	MDF-6VH4.5/6	MDF-6VH6/8	MDF-6VH8/10	MDF-6VH-15
Weight, kg	0,885	0,885	0,885	0,885
Connector	N-female	N-female	N-female	N-female
Length/Width/Depth, mm	210x156x32	210x156x32	210x156x32	210x156x32

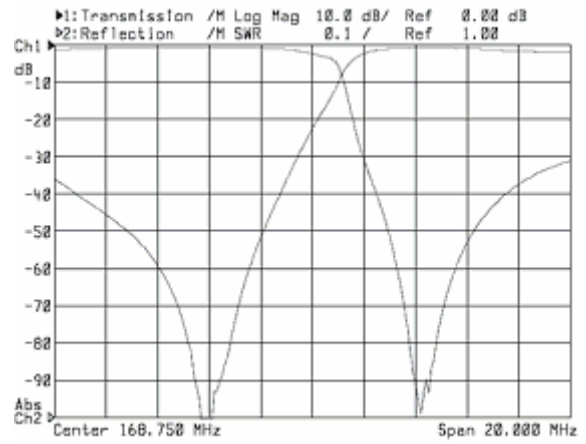
Availability of full duplex mobile radio stations on the market has initiated strong interest in duplex filters providing simultaneous operation of mobile station into common antenna. We are producing such devices now. These are mobile duplex filters MDF-6V and MDF-6VM for VHF range applicable to telecommunications networks operating in 148/172 MHz frequency range. Compact mobile duplexers are manufactured using six-section helical resonators by rejection design. At frequency separation of 4-6 MHz (MDF-6VH4.5/6), 6-8 MHz (MDF-6VH6/8), 8-10 MHz (MDF-6VH8/10) and 15 MHz (MDF-6VH-15) they provide full duplex operation mode of mobile radio stations at minimum loss and standard power output of 50 Watt. Dimensions of MDF-6V duplexer allow its mounting into the same case with radio station. However, one should notice, that such duplexers are ineffective, when implemented in base stations or at the sites with compromised electromagnetic compatibility.

Typical duplexers response curves

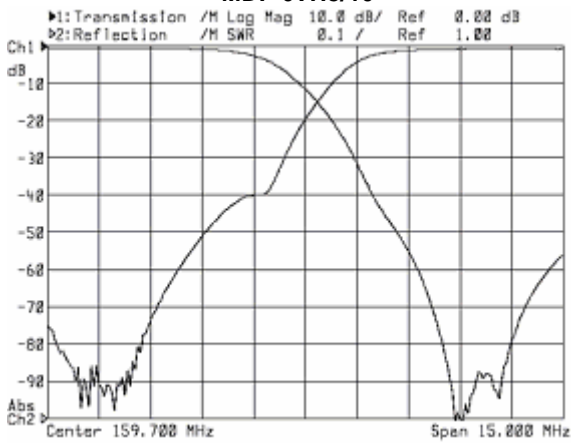
MDF-6VH4.5/6



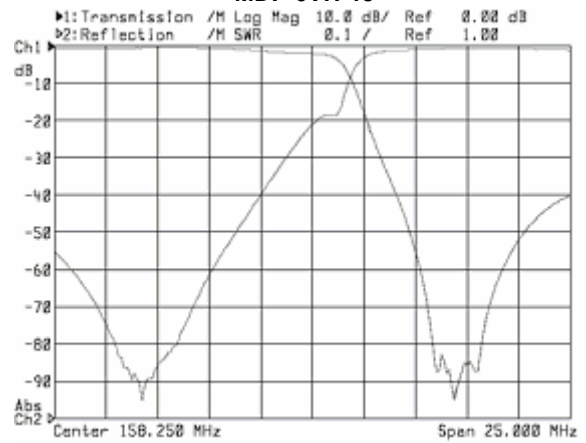
MDF-6VH6/8



MDF-6VH8/10



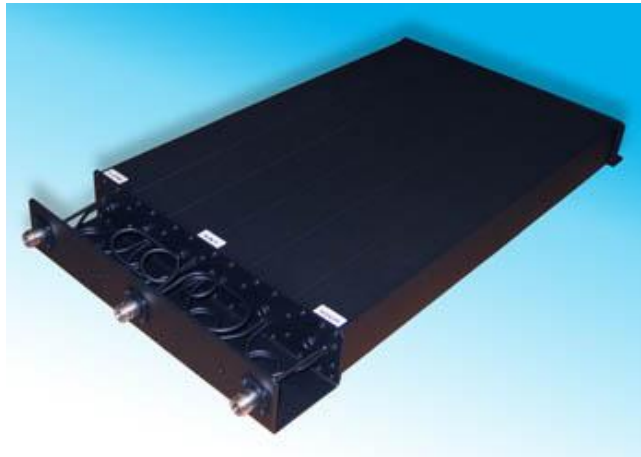
MDF-6VH-15





## 146-156 MHz Mobile duplexer MDF2-6V

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Tel.: (495) 775-43-19, 462-44-14  
Tel./fax: 462-44-14  
E-mail: radial@radial.ru  
www.radial.ru



### Electrical specifications

Model	MDF2-6V
Operating frequency band, MHz	146-156
Insertion loss (adjustable) not more, dB	1.3
Frequency separation TX/RX (min), MHz	2.5-4.5
Impedance, Ohm	50
Isolation, not less, dB	80
VSWR, not more than	1.5
Input power, not more, W	not more than 100
Temperature range, °C	from -30 to +50

### Mechanical specifications

Model	MDF2-6V
Weight, kg	8.7
Connector	N-female
Dimensions (LxWxH), mm	310x53x610

A new model MDF2-6V is a prototype of MDF-6V, but is performed on the basis of the usual linear (not spiral) cavities in the cases of the 50 mm cross-section. As a result an enhanced quality-factor helps to decrease the separation TX/RX to the value of 2-3 MHz and to increase the filtering capabilities of the duplexer.

### Typical duplexers response curves

