



Intermodulations filters

Model	Short description	Band, MHz	Price, EUR
IMF8-1V-50S-R/2	Narrow bandwidth diam. 8", single isolator, 50 W "regular"	140-174	467
IMF8-1V-50S-X/2	Narrow bandwidth diam. 8", single isolator, 50 W "extreme"	140-174	549
IMF8-1V-50D-R/2	Narrow bandwidth diam. 8", dual isolator, 50 W "regular"	140-174	661
IMF8-1V-50D-X/2	Narrow bandwidth diam. 8", dual isolator, 50 W "extreme"	140-174	752
IMF10-1V-50S-R/2	Narrow bandwidth diam. 10", single isolator, 50 W "regular"	140-174	510
IMF10-1V-50S-X/2	Narrow bandwidth diam. 10", single isolator, 50 W "extreme"	140-174	592
IMF10-1V-50D-R/2	Narrow bandwidth diam. 10", dual isolator, 50 W "regular"	140-174	704
IMF10-1V-50D-X/2	Narrow bandwidth diam. 10", dual isolator, 50 W "extreme"	140-174	794
IMF10-1V-125S-R/2	Narrow bandwidth diam. 10", single isolator, 125 W "regular"	140-174	710
IMF10-1V-125S-X/2	Narrow bandwidth diam. 10", single isolator, 125 W "extreme"	140-174	777
IMF10-1V-125D-R/2	Narrow bandwidth diam. 10", dual isolator, 125 W "regular"	140-174	1067
IMF10-1V-125D-X/2	Narrow bandwidth diam. 10", dual isolator, 125 W "extreme"	140-174	1134
IMF10-1V-300S	Narrow bandwidth diam. 10", single isolator, 300 W	140-174	1030
IMF10-1V-300D	Narrow bandwidth diam. 10", dual isolator, 300 W	140-174	1731

Intermodulation filters design

Each condition in large cities degraded dramatically in the last years, mainly because of uncontrolled operation of high power transmitting equipment, especially one, emitting digital streams. What makes situation worse, is that such transmitters are concentrated on the top of highest buildings and masts of the city, usually.

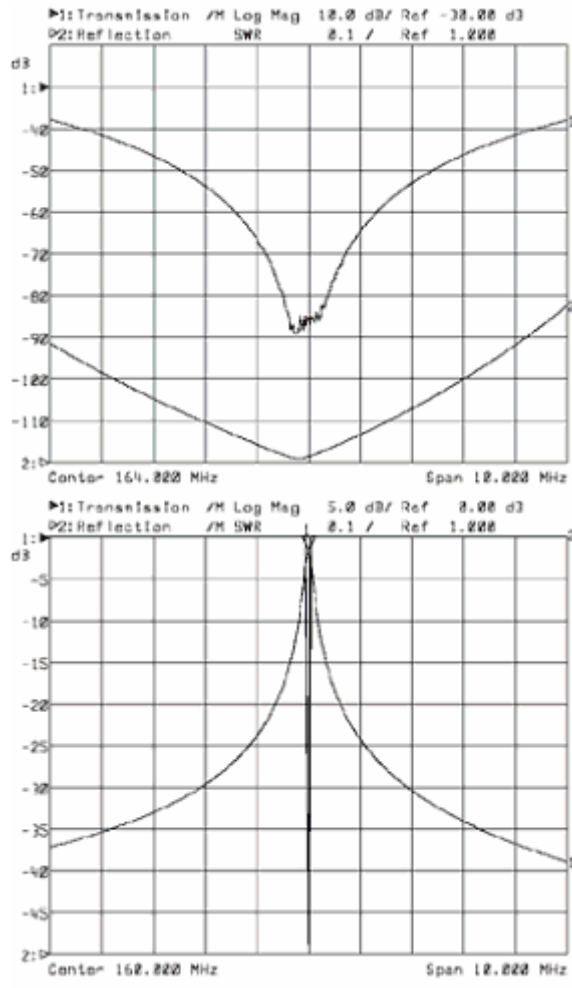
As a result, intermodulation throbs, originating interference for other means of communication, appear, due to neighboring antennas signals penetration. Transmitters noise itself "covers" the whole frequency range within several kilometers distance. Reach of transmitters installed in the neighborhood reduces dramatically.

Our company have designed and now successfully sale special filtration systems, intermodulation filters, consisting of 8 or 10-inch coaxial cavity bandpass filter and single or double ferrite isolator (see fig. 1), designated to fight against such interference.

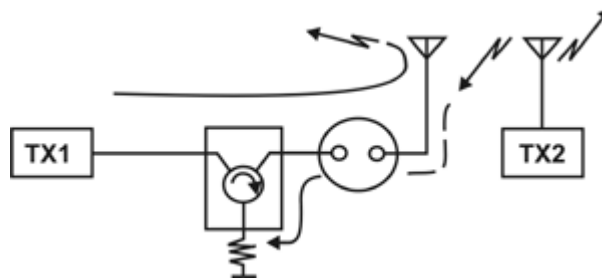


On the given figures gain-frequency characteristic of the both devices is depicted individually.

As you can see, their characteristics are opposite to one another. If bandpass filter signal attenuation is growing moving away from resonance frequency, then, on the contrary, isolator attenuation is growing moving to central frequency (reverse signal passing from antenna to transmitter is meant).



Thus, we have system, providing direct signal passage with minimal loss (not more than 1.8 dB), and limiting penetration of spurious signals (at 75 dB level) to output circuit completely.



Besides, filter characteristic enables to attenuate transmitter self-noise radiation according to its gain-frequency characteristic.

Decision on usage of double or single circulator depends directly on the distance to neighboring antennas. Transmitter combiner, enabling several transmitters to operate through common antenna, can be constructed using IMF8-1V-50D, also.

The ferrite isolators of Regular (R) class provide an operation of the intermodulations filters or transmitting link in temporal regime of exploitation with TX/RX =1:5, i.e. when the working load onto the transmitters of your system is not high. The ferrite valves of Extreme (X) class are being applied in the case when repeaters operate with enhanced load (up to 100% of the cycle). These are more expensive and highly reliable products with the valves based upon the radiators (which do not allow the ferrites to become overheated) and for massive carrying out (external) loads.



140-174 MHz Intermodulations filters IMF8- 1V-50S-R/2(X/2), IMF8-1V-50D-R/2(X/2)

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Electrical specifications

Model	IMF8-1V-50S-R/2(X/2)	IMF8-1V-50D-R/2(X/2)
Operating frequency band	140-174 MHz	
Insertion loss, dB	0,9	1,3
Impedance, Ohm	50	
Attenuation	see fig.	
VSWR, not more than	1,5	
Input power, W	50	
Isolation ANT-TX not worse, dB	30	75

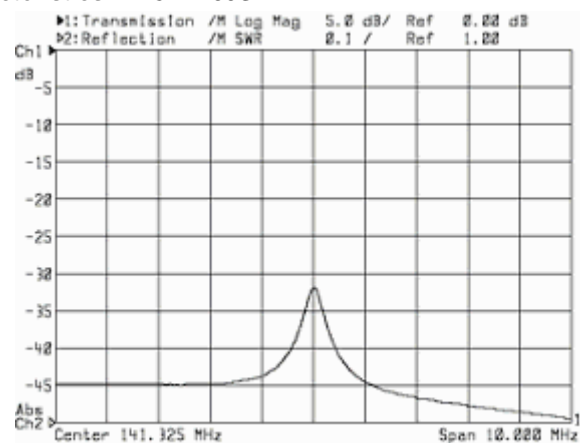
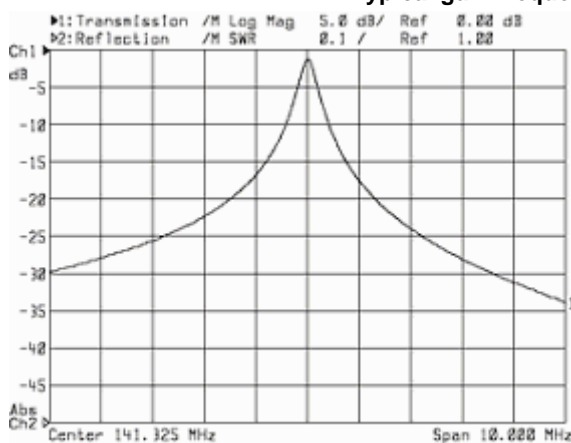
Mechanical specifications

Model	IMF8-1V-50S-R/2(X/2)	IMF8-1V-50D-R/2(X/2)
Diameter of cavity, mm (ins.)	206 (8")	
Weight, kg	3,6	3,75
Temperature Range, °C	-30 to +50	
Connector	N-female, 7/16 DIN (optional)	

Intermodulation filter IMF8-1V-50S-R/2(X/2), installed in transmitting section, will provide low loss signal passage, attenuate out-of-band transmitters radiation, preventing signals induced to antenna from penetration to transmitter output stage. Single isolator in this filter can be used, when distance between neighboring antennas does not exceed 10λ across or exceed 2λ at coaxial vertical arrangement of antennas. For short distances IMF8-1V-50D with double isolator must be used.

The ferrite isolators of Regular (R) class provide an operation of the intermodulations filters or transmitting link in temporal regime of exploitation with TX/RX = 1:5, i.e. when the working load onto the transmitters of your system is not high. The ferrite valves of Extreme (X) class are being applied in the case when repeaters operate with enhanced load (up to 100% of the cycle). These are more expensive and highly reliable products with the valves based upon the radiators (which do not allow the ferrites to become overheated) and for massive carrying out (external) loads.

Typical gain-frequency characteristics IMF8-1V-50S





140-174 MHz Intermodulations filters IMF10- 1V-50S(D), IMF10-1V-125S(D), IMF10-1V-300S(D)

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Electrical specifications

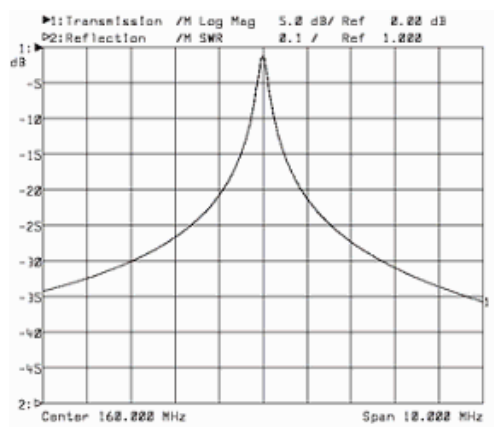
Model	Insertion loss, dB	Input power, W	Isolation ANT-TX not worse, dB	Diameter of cavity, mm (ins.)	Mass, kg	Temperature Range, °C
IMF10-1V-50S-R/2(X/2)	0.9	50	30	257 (10")	4.2	-30 to +50
IMF10-1V-50D-R/2(X/2)	1.3	50	75		4.35	
IMF10-1V-125S-R/2(X/2)	0.9	125	30		4.7	
IMF10-1V-125D-R/2(X/2)	1.3	125	75		4.9	
IMF10-1V-300S	0.9	300	30		4.85	
IMF10-1V-300D	1.3	300	75		5.7	

Intermodulation filter IMF10-1V-50S-R/2(X/2), installed in transmitting section, will provide low loss signal passage, attenuate out-of-band transmitters radiation, prevent signals induced to antenna from penetration to transmitter output stage. Application of 10" cavity filter will provide the best out-of-band radiation attenuation and increase isolation of your antenna-feeder system from neighboring transmitters. Installation of single isolator is permitted subject to distance to neighboring antennas makes up 10 λ (across) or 2 λ (in vertical). For shorter distances IMF10-1V-50D-R/2(X/2) with double isolator should be used.

The ferrite isolators of Regular (R) class provide an operation of the intermodulations filters or transmitting link in temporal regime of exploitation with TX/RX = 1:5, i.e. when the working load onto the transmitters of your system is not high. The ferrite valves of Extreme (X) class are being applied in the case when repeaters operate with enhanced load (up to 100% of the cycle). These are more expensive and highly reliable products with the valves based upon the radiators (which do not allow the ferrites to become overheated) and for massive carrying out (external) loads.

Typical gain-frequency characteristics

filter PF10-1V



isolator IF-2V-125

