MOBILE COMMUNICATION

Passive Intermodulation Measuring Filter

With Integrated Directional Coupler

KATHREIN

Introduction

Kathrein passive intermodulation filters are specified to fulfil the PIM verification requirements of manufactured products. Thanks to their compact design, these filters can also be integrated into PIM measurement devices.

FEATURES

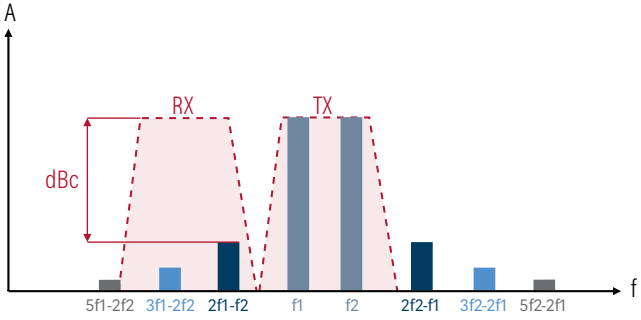
- High PIM performance (typical PIM 3rd order higher than the guaranteed specification)
- High isolation in DL path (typically -100 dB in almost all filters)
- Low insertion loss
- Compact filter dimensions with high electrical specifications
- Very well engineered resonator topology
- Integrated directional coupler in most of the measuring filters

Passive Intermodulation

Passive Intermodulation (PIM) is an unwanted signal generated at mathematical combinations by mixing of two or more RF signals in non-linear passive components, such as antennas, connectors or cables. If two carrier frequencies f1 and f2 are transmitted from a typical cell site, PIM signals can occur at the following frequencies:

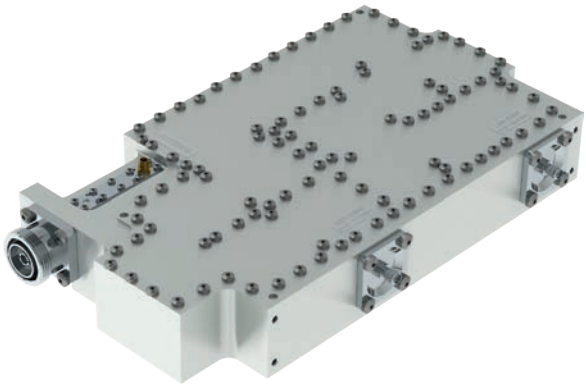
$$fPIM = m*f1 \text{ and } \pm n*f2$$

where 'm' and 'n' are positive integers and the sum of 'm' and 'n' is the product order. 3rd (2f1-f2) order PIM products having the highest power level are considered the most interfering for the RX band. Usually PIM tests are performed for 3rd order products of the device under test (DUT) before deployment. Typically a maximum value of -117 dBm (small cell base station receiver sensitivity) is needed for most of the DUTs.

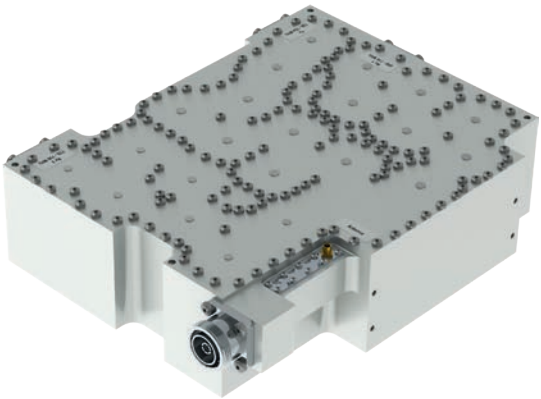


Kathrein PIM Filter

- Compact design
- Can be integrated into PIM measurement devices



Diplexer A30089



Triplexer A30087V02

Specifications

3GPP Bands	Order No.	Frequency Range [MHz]	IM 3rd Order [dBc]
Diplexer			
B1	A30053	1920–2060 / 2110–2170	< -178
	A30089*		< -172
B3	A169070	1710–1785 / 1805–1880	< -178
	A30100*		< -172
B5	A169210	824–851 / 869–896	< -178
	A30085*		< -172
B7	A30051	2445–2580 / 2620–2695	< -178
	A30102*		< -172
B8	A30086V02	880–915 / 925–960	< -172
B11, B21	A30105V03*	1427.9–1462.9 / 1475.9–1510.9	< -172
B20	A30088*	792–822 / 832–862	< -172
	A30058		< -172
B22 (3500)	A40010	3410–3484 / 3510–3594	< -175
B2, B4	A30101*	1710–1910 / 1930–2155	< -172
B68	A30055	698–730 / 745–793	< -175
B71	A30106	617–652 / 663–698	< -172
Triplexer			
B12, B13, B14	A30087V02	698–716 / 728–764 / 776–798	< -172

*with integrated directional coupler (50 dB)

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