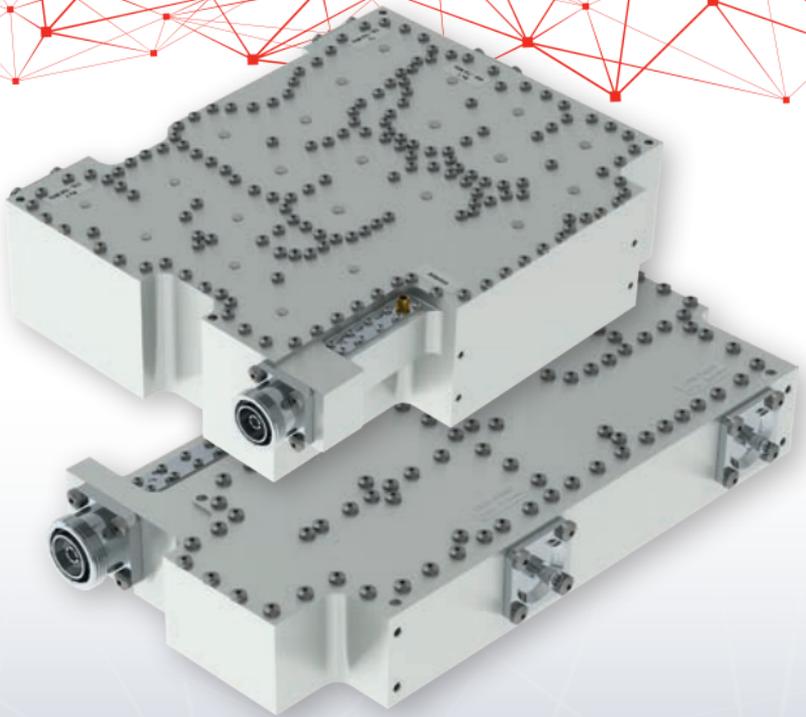




MOBILE  
COMMUNICATION

# Passive Intermodulation Measuring Filter

With Integrated Directional Coupler



**KATHREIN**

# PIM Measuring Filter

## 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 3<sup>rd</sup> 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

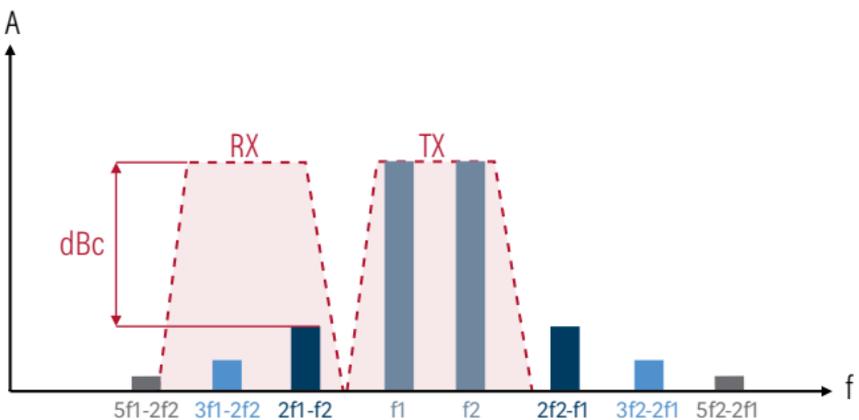
# PIM Measuring Filter

## 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  $f_1$  and  $f_2$  are transmitted from a typical cell site, PIM signals can occur at the following frequencies:

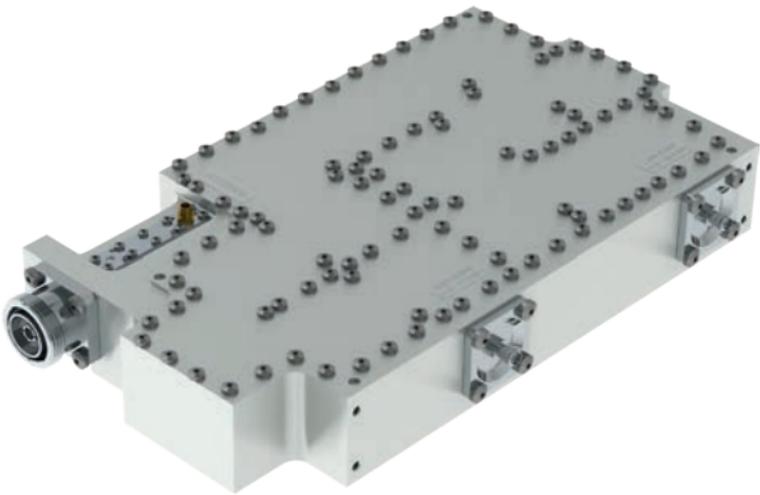
$$f_{PIM} = m \cdot f_1 \text{ and } \pm n \cdot f_2$$

where 'm' and 'n' are positive integers and the sum of 'm' and 'n' is the product order. 3<sup>rd</sup> ( $2f_1-f_2$ ) order PIM products having the highest power level are considered the most interfering for the RX band. Usually PIM tests are performed for 3<sup>rd</sup> 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.

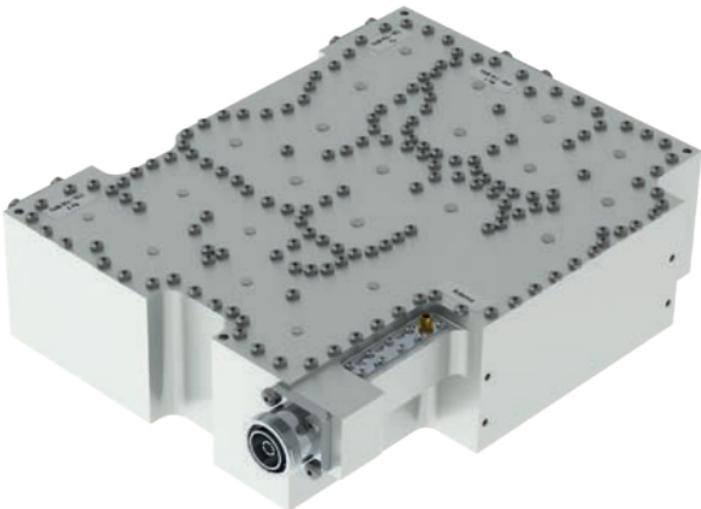


# Kathrein PIM Filter

- Compact design
- Can be integrated into PIM measurement devices



Diplexer A30089



Triplexer A30087V02

# PIM Measuring Filter

## Specifications

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

\*with integrated directional coupler (50 dB)

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