Ref	Resonator Type	Techniques	Order	f_0 (GHz)/ FBW	Q_u	IL/IG (dB)	TZ	NF (dB)	IP1dB (dBm)	OP1dB (dBm)	IIP3 (dBm)	OIP3 (dBm)
[21]	Microstrip	Lossy, Non-Unif. Q	6	0.96/6.2%	250-80	7.2	Yes	*	**	**	**	**
[30]	Microstrip	Lossy, Equalized Q	4	1,11.5/%	200	3	Yes	*	**	**	**	**
[28]	Microstrip	Lossy, Non-Unif. Q	6	3.8/21%	95-57-35	2.5	Yes	*	**	**	**	**
[29]	double-layered coupled resn.	Lossy, Equalized Q	6	0.97/25.7%	120	3.4	Yes	*	**	**	**	**
[32]	Microstrip	Lossy, Equalized Q	4	0.925/9.2%	N/A	≈8.5	No	*	**	**	**	**
[26]	Combline Cavity	Lossy, Equalized Q	4	11.18/1%	1300	≈2.9	No	*	**	**	**	**
[4]	MMIC, $\lambda/4$ line	HEMT-Negative Resistance	2	60	***	2.8	Yes (I/O Cross-Coupl.)	10.5	8.8	5	***	***
[17]	MMIC, Lumped	Resonator Link with FET	3	1.9	***	12 (IG)	No	6.2	***	***	***	***
[14]	PCB Lumped Active Inductor	Class-AB BJT Active Inductor	2	0.7/5% (3-dB FBW)	***	7.2	No	10	***	12	***	***
[8]	Microstrip	Parametric Active	3	2.03/8%	***	0.22	No	3.7	***	17	***	26.5
[34]	SIW	Filtering Amplifier	2	10/5%	***	9 (IG)	No	≈ 3	≈ −5.5	≈ 5.5	***	***
FML	Microstrip	Hybrid	3	1/5%	131.2	2.89	No	5.19	38	34	46.94	44.05
FHL	Microstrip	Hybrid	3	1/5%	24.6	11.9	No	14.2	27	14	46	34.1

* Noise figure of passive filters will be equivalent to the reciprocal of their available power gain, or to their attenuation if perfectly matched at input and output.

** Passive filters are assumed to be linear and the information of P1dB and IP3 are not reported.

*** The data is not explicitly reported in the corresponding study.

IG: Insertion gain, TZ: Transmission zero.

Lossy Microwave Filters

Active Filters

Proposed Hybrid Lossy-Active Technique