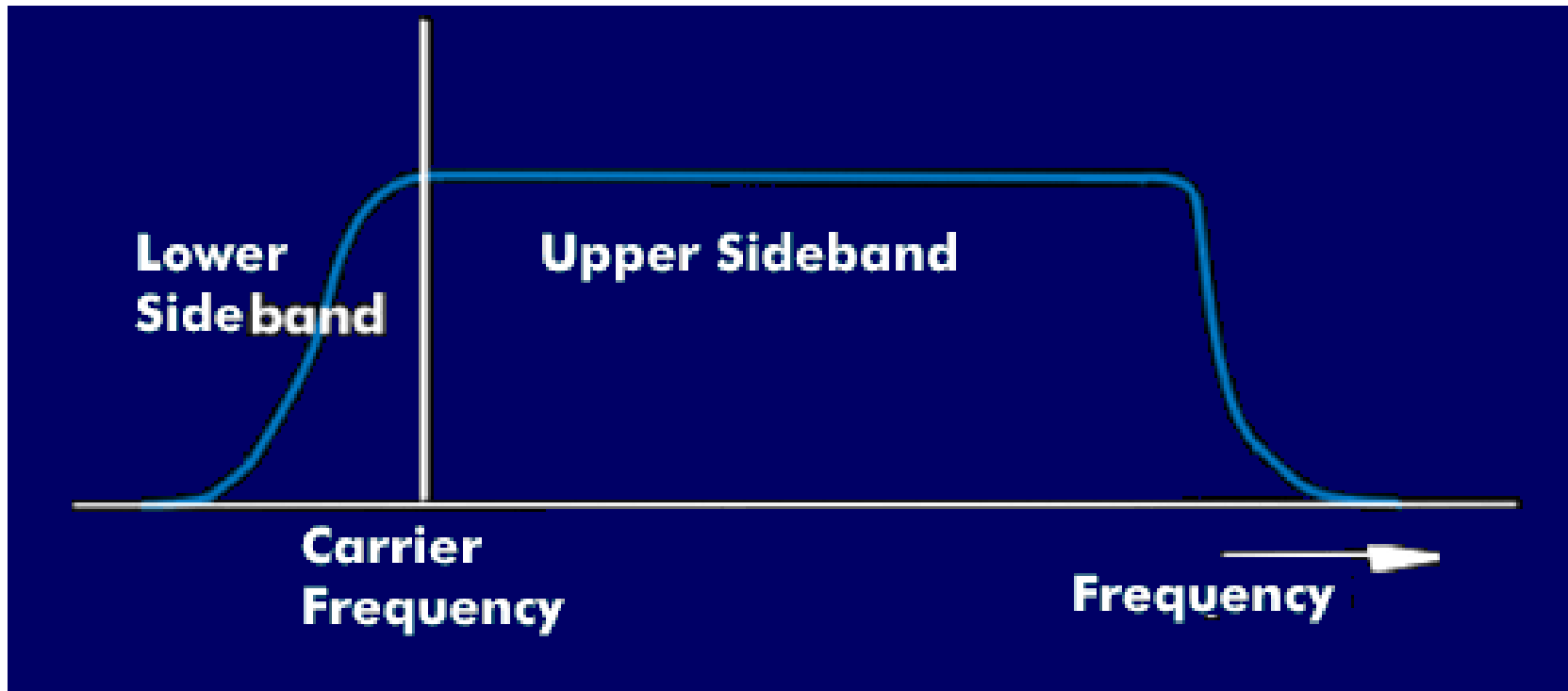


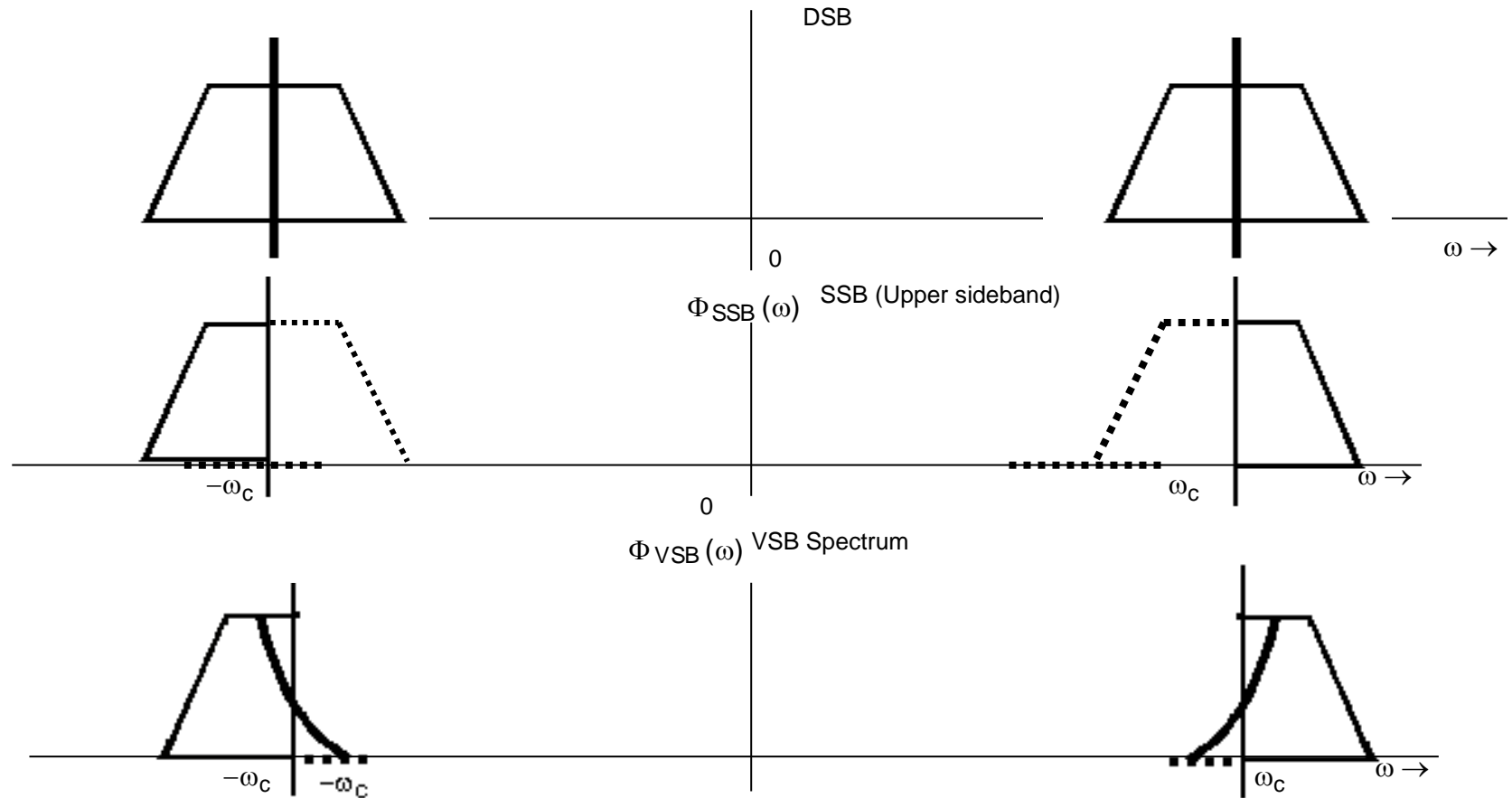
Vestigial-Sideband AM



Vestigial-Sideband AM

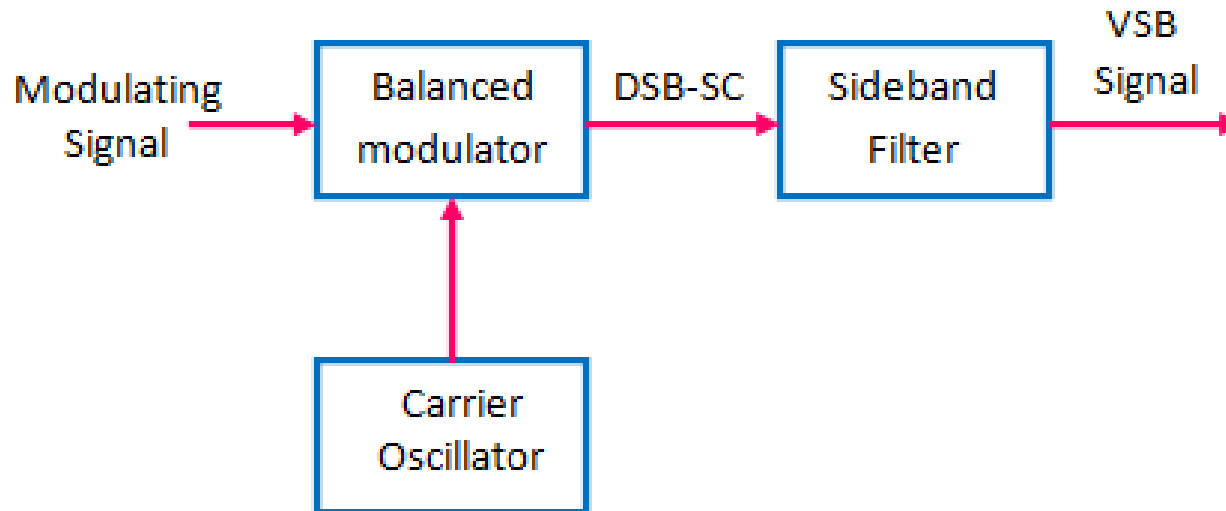
- The stringent-frequency response requirements on the sideband filter in an SSB-AM system can be relaxed by allowing vestige, which is a portion of the unwanted sideband, to appear at the output of the modulator
- The resulting signal is called *vestigial-sideband (VSB) AM*
 - This type of modulation is appropriate for signals that have a strong low-frequency component, such as video signals
 - That is why this type of modulation is used in standard TV broadcasting

Vestigial-Sideband AM

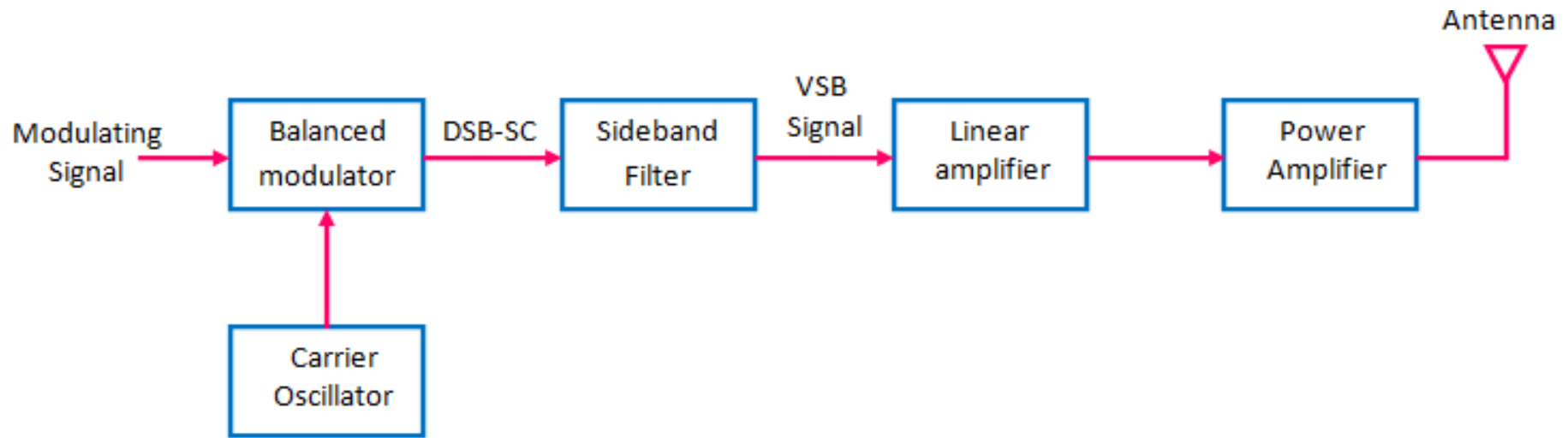


VSB - Modulation

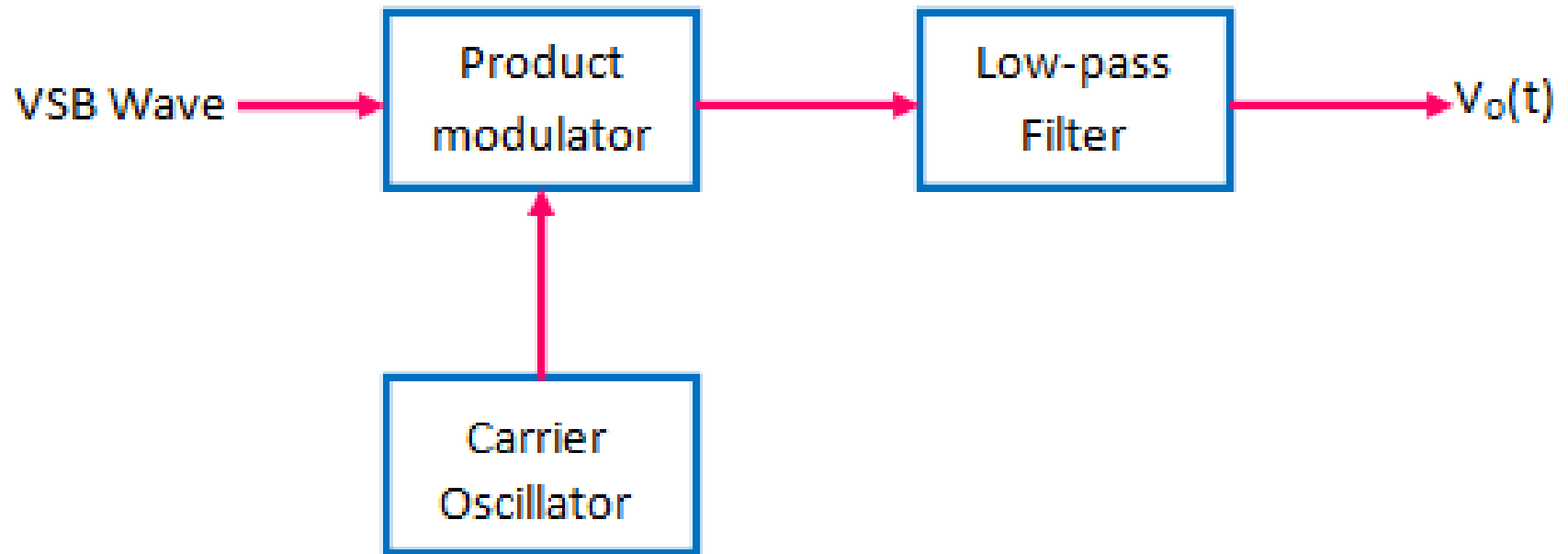
- To generate a VSB-AM signal, we generate a DSB-SC AM signal and pass it through a sideband filter




Vestigial-Sideband AM



Demodulation of VSB





<i>Parameter</i>	<i>AM (DSBFC)</i>	<i>DSBSC</i>	<i>SSB</i>	<i>VSB</i>
Carrier suppression	No	Yes	Yes	Yes
Sideband suppression	No	No	Yes, one sideband fully suppressed	Yes, one sideband partially suppressed
Transmission bandwidth	$2f_m$	$2f_m$	f_m	$f_m + f_v$
Transmission power efficiency	Minimum (Requires more power)	Moderate (Requires less power)	Maximum (Requires lesser power)	Moderate (Requires less power)
Receiver design	Simple and inexpensive	Complex and expensive	More complex and expensive	Complex and expensive
Applications	Radio broadcast	Point-to-point communication	Long-distance communication	Picture transmission in TV