High Superheat
Excessive or high superheat is an indication of insufficient refrigerant in the evaporator coil for the heat load present. This could mean that not enough refrigerant is entering the coil or this could also indicate an excessive amount of heat load on the evaporator coil.
Some possible causes of high superheat:

- Low Refrigerant Charge
- Liquid Line Restriction
- Evaporator Air Flow too High
- Excessive Load
- Metering Device not feeding correctly
- Incorrect Metering Device
Low Charge

• If there is insufficient refrigerant in the system, all of the refrigerant will evaporate in the first few passes of the evaporator coil.
• The vapor will continue to pick up heat from the load as it passes through the remainder of the evaporator coil.
• The excess heat picked up by the vapor causes a higher than normal vapor temperature (superheat).
• In the case of a low charge, both suction and discharge pressures will be lower than normal.
• Sub-cooling will be lower than normal.
Liquid Line Restriction

- A restriction in the liquid line portion of the system will not allow adequate liquid refrigerant to reach the evaporator coil.
- This will cause many of the same symptoms as a low refrigerant charge, with the primary difference being the amount of sub-cooling.
- Often there is a noticeable temperature drop at the point of the restriction.
- Moisture in the system can freeze and block the flow of refrigerant.
- This most often occurs at the entrance to capillary tubes, in driers and expansion valves.
- With a liquid line partial restriction the suction pressure will be lower than normal and the discharge pressure will be normal to lower than normal.
- A complete restriction will cause both pressures to be much lower than normal.
Excessive Evaporator Air Flow

• Excess air flow across the evaporator coil reduces the moisture removal capability (latent capacity) of the equipment.
• The refrigerant vapor picks up additional sensible heat which in turn causes higher than normal suction pressure and a higher than normal superheat.
Excessive Load

- Excessive load conditions will result in higher than normal heat content in the air crossing the evaporator.
- This excess heat will be absorbed by the refrigerant vapor, increasing its superheat.
- Abnormally high indoor ambient conditions or an increase in occupant load (such as a party) can cause an increase in superheat.
- When checking superheat, be sure that the load and ambient conditions are within the specified range.