Nanolubricant been introduced in compressor might improve the performance of automotive air conditioning system. Prior testing of the nanolubricant enhancement performance, thermal conductivity of Al₂O₃/PAG and SiO₂/PAG nanolubricants has to be investigated and compared. Al₂O₃ and SiO₂ nanoparticles first been dispersed in Polyalkylene Glycol (PAG) for different volume concentrations. KD2 Pro was used in determining the thermal conductivity of the nanolubricant. The experimental results showed that the thermal conductivity of the Al₂O₃/PAG and SiO₂/PAG nanolubricants increased by volume concentration but decreased by temperature. The highest thermal conductivity was observed to be 0.153 W.(m · K)⁻¹ and enhancement of 1.04 times higher than the base lubricant for Al₂O₃ with 1.0 volume concentration. Finally regression equations were developed in order to estimate the thermal conductivity for these nanolubricants.