

Antenna Report

FCC-ID: 2A4B7-1021

Product Model Number: V4E6N2

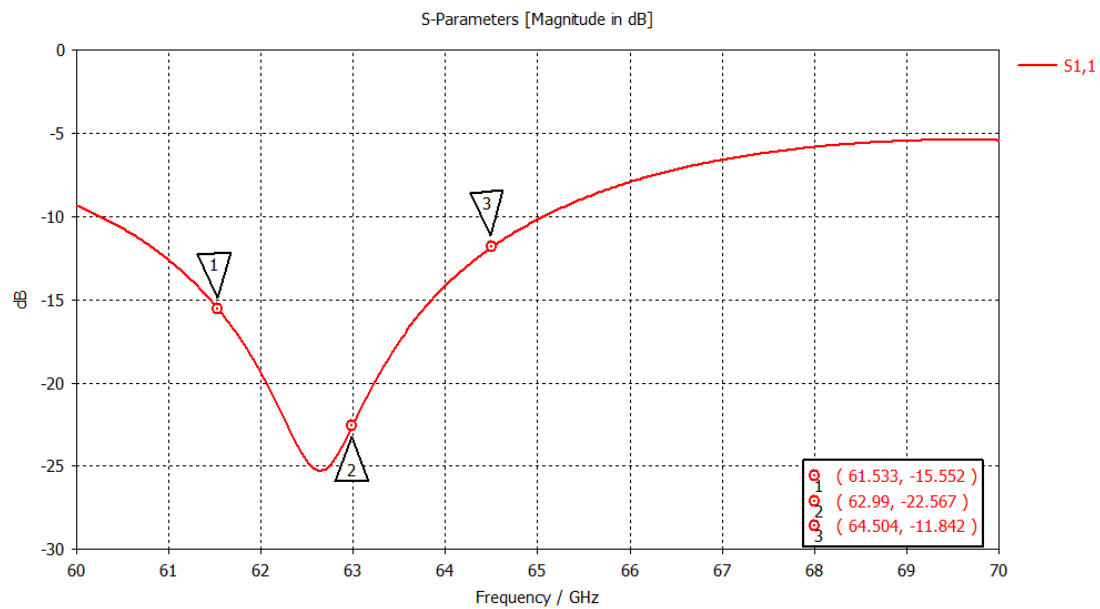
Date: 08/15/2022

Blueberry Cornel LLC

Antenna Specification

Frequency Range of operation

- Radar has two possible modes:
 - o 61.03-61.47 GHz
 - o 62-63.1 GHz
- Antenna is matched $S_{11} < -10\text{dB}$ in 60-65 GHz



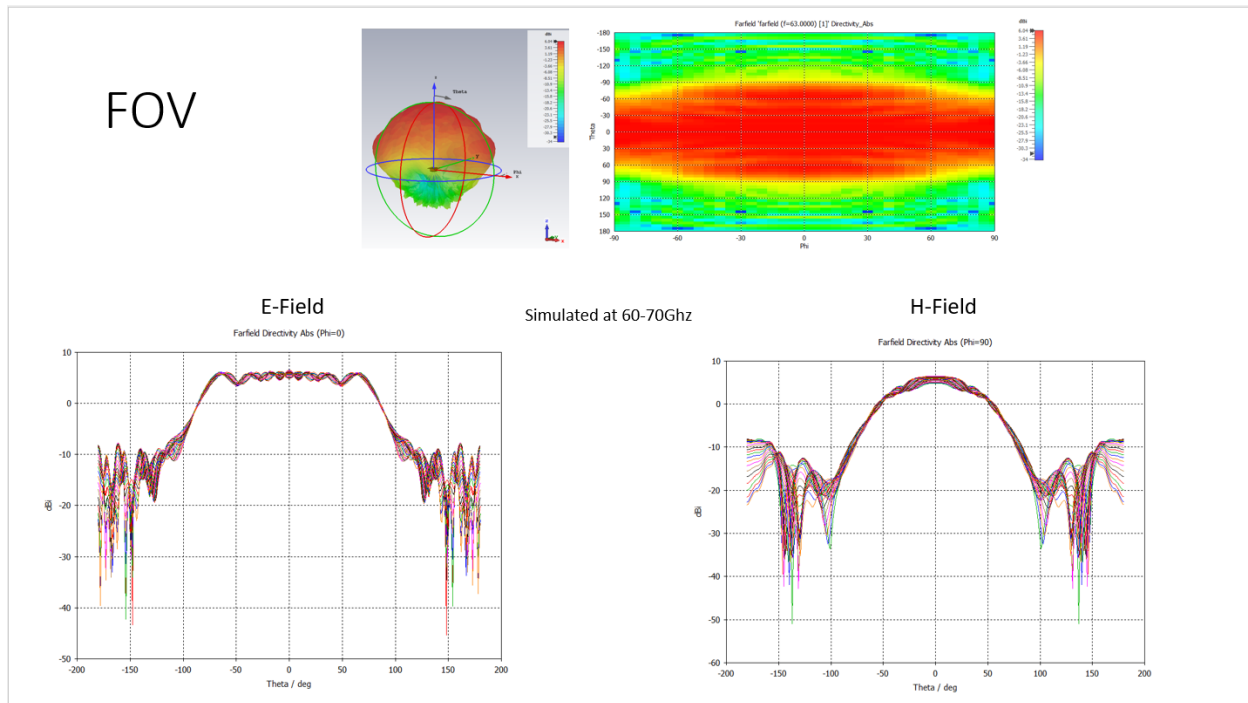
Antenna Types:

- Antennas are embedded antennas on the PCB

Peak Antenna Gain:

Band	Peak Gain (dBi)			
	Group1		Group2	
	Single element	Array gain (12 antennas)	Single element	Array gain
62 – 63.1 GHz	6	16.79	6	16.79
61.03 – 61.47 GHz	6	16.79	6	16.79

Antenna Patterns



Test Method and Parameters: Antenna gain values are determined using FDTD computational analysis. The antenna gain submitted to FCC is based on simulation by a proven and reliable electromagnetic simulation software (CST – one of the industry standards). The simulated performance is in good correlation with the theoretically anticipated value corresponding to a dipole radiating into a half-space (due to a ground plane).

The simulation was done using CST version R2022 SP4, with the following parameters:

- Smallest cell 0.0135mm
- largest cell 0.097 mm
- Solver was Time domain solver
- Boundary conditions were Open with space

Per FCC KDB 662911 D01 Multiple Transmitter Output v02r01, if any two correlated transmitters correlated, the MIMO antenna gain should be calculated using "G= GANT + 10 log(NANT) dBi"

For this device, the "streams" are completely correlated, as we are transmitting the same frequency and waveform up to BPSK modulation.

$G(\text{array}) \text{ in dBi} = G(\text{single element}) + 10\log(\text{number of antennas}) \text{ in dBi};$

with real figures: $G(\text{array}) = 6 + 10\log 12 \text{ [dBi]} = 16.79\text{dBi}$