To whom it may concern:

It is my pleasure to write a letter of recommendation for Mr. Brian Loughran.

I was one of the mentors for Brian, as part of Alcatel-Lucent’s Summer Internship program at our R&D facility in Murray Hill, New Jersey during the 2015 calendar year. We had outlined a general project for Brian that entailed the characterization of thermal, air flow, and acoustic noise measurements of a system that had various elements that were designed by different Alcatel-Lucent engineering teams. The system’s primary constituents included: a digital base band unit (BBU) that utilized forced convection cooling via axial fans, a sheet metal enclosure that was used to mechanically support as well as to direct air flow to vertically oriented BBU’s in a front to back manner, a power distribution panel (PDP), and various cables for interconnecting power, test, and GPS between units in the system. All of the aforementioned system elements were actual products that were either in high volume production or were planned for future deployment to one of our major end customers.

Though our design team provided high level guidance and periodic reviews of Brian’s work, he was largely responsible for formulating test strategies and executing the details of his summer project. Some of his major activities involved: the construction of a small wind tunnel to help quantify the air flow characteristics of various BBU circuit card combinations, the instrumentation (e.g. thermocouples, voltage/current shunts, hot wire anemometer, stroboscope) and associated data collection of the BBU’s in a standalone configuration as well as mounted inside of the enclosure within a “heat tent”, and the setup of an array of acoustic sensors around the periphery of multiple BBU enclosures situated within an anechoic chamber. All of the data that he collected had to be analyzed to derive conclusions about the thermal, air flow, and acoustic performance of the system relative to: vendor component options (e.g. fan speeds), physical design parameters (e.g. enclosure inlet/exhaust plenum dimensions), customer network equipment building standards (e.g. noise), and reliability parameters (e.g. component transistor junction temperature limits). Brian compiled all of the data and presented it along with his conclusions in coherent interim presentations to design engineers that stimulated further technical discussions and recommendations for further experimentation. His project helped to confirm and, in some cases, enhance the design of the system for eventual delivery to Alcatel-Lucent’s end customer. In one notable instance, his data was used to draw inferences about the thermal and air flow characteristics of a similar system that was deployed at a customer’s site in the Denver region.

At the conclusion of the Summer Intern Program, Brian along with all of the other students, made final presentations of their projects to an audience of engineers, product and project managers, and administrators. He was actually the emcee of the event, coordinating the presentations among his peers and offering additional insights into their work. His performance as well as the professional quality of all of the student presentations was viewed very highly by everyone in attendance.

Based on his achievements in the Alcatel-Lucent Summer Intern Program, I can confidently say that Brian is a highly motivated, well organized, intelligent individual who has a very good engineering intuition. He is always curious about how things work and seeks various ways to solve problems. I would very highly recommend him for any future positions in the field of mechanical engineering, whether they are academic, industrial, or governmental in nature.

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