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The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

UNC Charlotte – Lee College of Engineering Senior Design Program

Senior Design Project Description

Company Name	*CommScope*	**Date Submitted**	*28 June 2019*
Project Title	*Test Apparatus for RJ-45 Connectivity* **COMMS_APP**	**Planned Starting Semester**	*Fall 2019*

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills:

Discipline	Number	Discipline	Number
Mechanical	2	Electrical	1
Computer	1	Systems	
Other ( )			

Company and Project Overview:

CommScope (NASDAQ: COMM) helps companies around the world design, build and manage their wired and wireless networks. Our network infrastructure solutions help customers increase bandwidth; maximize existing capacity; improve network performance and availability; increase energy efficiency; and simplify technology migration.

You will find our solutions in the largest buildings, venues and outdoor spaces; in data centers and buildings of all shapes, sizes and complexity; at wireless cell sites; in cable head-ends and telco central offices; and in airports, trains, and tunnels. Vital networks around the world run on CommScope solutions.

Our size, reach, supply chain, operational precision, and responsive personnel power our advances into new forms of communication. This forward-thinking approach is supported by a long tradition of excellence—CommScope was instrumental in the creation of:

- Cable TV infrastructure
- The first wireless networks
- The first data centers
- The first intelligent buildings

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Some sample products designed and built at the CommScope Greensboro location:

In Greensboro, we develop and manufacture a broad range of modular, copper RJ45 jacks for data and voice transmissions. RJ-45 connectivity must maintain electrical contact in challenging applications where they are twisted and pulled. This project will design a test apparatus to test for continuity performance in these conditions.

Project Requirements:

This project will design an automated test apparatus to test the electrical performance of a RJ-45 connector that is subjected to various mechanical stresses. A RJ-45 connector with cable will be plugged into the female socket portion of the test apparatus. The operator will push a button (touchscreen, etc) to initiate the test. The apparatus will baseline the electrical connectivity and resulting transmission data rate, then measure the effect as the cable is subjected to mechanical stresses. The mechanical stresses will comprise conditions such as applied torsion, manipulation of cordage in different axes, etc. These stresses would be machine driven to ensure consistency and repeatability. A display for the test should be incorporated to indicate the current status of the test conditions and data rate. Testing information should be recorded into a database and available for print out.

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Expected Deliverables/Results:

- Fully automated test fixture meeting the above requirements. An operator will load the cable/connector into the apparatus, push a button and watch the screen as the test cycles through the steps defined.

Disposition of Deliverables at the End of the Project:

Hardware developed is the property of the Industry Supporter. The work product is displayed at the last Expo then immediately handed over to the supporter unless arrangements have been made to deliver at a future date.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Interest in mechanical and computer controls