Contribution ID: **201** Type: **Poster**

Versatile Transceiver and Transmitter Production Status

Wednesday 25 September 2013 17:12 (1 minute)

Production of the Versatile transceiver and twin transmitter modules for use in the readout and control systems of upgrading LHC detector systems is starting. We review the performance of the prototypes produced so far and show that the modules are ready for production. We outline the commercial actions being taken to procure parts and assemblies and show the production plan for delivering known good parts in the various flavours required for the upgrade projects that will be using them.

Summary

The Versatile Link project aims to provide a multi-gigabit per second optical physical data transmission layer for the readout and control of High Luminosity LHC (HL-LHC) experiments. A point-to-point bidirectional system architecture is proposed. The front-end component that will enable the configuration of any of the Versatile Link's supported architectures is either a bi-directional module composed of both optical transmitter and receiver –the Versatile Transceiver (VTRx); or a twin transmitter for uni-directional applications (VTTx). Both SingleMode (SM) and MultiMode (MM) flavours of the VTRx and a MM VTTx have been developed to support the various types of installed fibre-plant in the LHC experiments.

Functional prototypes of all three module variants have been successfully designed, built, and tested in the laboratory. The latest generation include final versions of the laser driver and TIA/LA receiving amplifier married to a set of shortlisted lasers and photodiodes suitable for the three module variants. The newly finalized mechanical assembly including a custom-designed plastic connector latch has also been included in the assemblies that will be shown. The final prototypes have been fully evaluated for functionality and operation across the full operating temperature range. The results obtained will show that the design is sufficiently mature to go into mass production.

The overall required quantities of the different module variants will be reviewed and details will be given on how this requirement is split between the different upgrade projects. We will outline the procurement, production, and testing strategy for each module type and conclude with the overall timeline of the production.

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Session Classification: Poster