

Minutes from OPEN INNOVATION WP 3 technical meeting – PART I

07-11-2016 14.00 to 15.30

Attendance: Longfei (TU/e), Weiming (TU/e), Roel (SMART), Rui (SMART), Ronald (Bright), Pim (Technobis), Kevin (TU/e), Saeed (Effect)

Opening:

This is the first technical meeting on work package level for the Open Innovation (OP Zuid) project. Following meetings are planned every two weeks on Monday afternoon 14:00-16:00.

WP3.1 BB Design

- Agreement on iterations of modulator BBs, e.g. 20 GHz, 40 GHz, 80 GHz EO bandwidth. All specifications should be worked out closely involving application partner Effect Photonics.
- Agreement on two design types of modulator BB according to document **WP3-1_M0**: (1) conventional CPW type on MQW and SI substrate for initial development and (2) capacitively-loaded (CL-TWE) structure as the high-speed version.
- Effect points out that modulator BB development should be made compatible with other BBs of the entire platform and not be viewed as a discrete component development task, which is accepted by all the partners. Focus is on entire platform improvement.
- Passivation procedure represents a challenge for CP-TWE type modulators. At the appropriate time, passivation tests will be carried out to study that aspect.
- Processing tests involving Al-based QW will be carried out before including those in MPWs
- RF interconnect concept is based on two layer metal routing. Layer 1 is defined as of now, layer 2 is defined on top of second passivation layer.
- **[ACTION] Technobis** will give information on tunable laser specifications needed in their application with respect to linewidth, tuning range, continuity of tuning. Desired now: 9 nm tuning, 100 kHz linewidth, no mode hops.
- Lateral SSC using inverted taper can be easily integrated into platform after additional layer growths (preferred by Smart). Implementation in MPW is aimed at start of next year. Processing steps shall be combined with those of other BBs (e.g. n-metal).
- Further concepts for SSC, especially involving pushing mode into second passivation polymer layer, shall be explored after passivation process is available (idea by Bright).
- **[Action] TU/e** will circulate document on BB concept for RF line and SSC as soon as possible, similar to that for modulators.
- **[Action] Bright** will circulate similar document for tunable laser and high-precision filter.
- Both DFB sections and DBR gratings will be available for this project. Timeframe of availability is 2017.

WP3.3 BB Characterization

- Starting from list of BBs + figure of merits (FoM), priority items will be selected that go on new MPW test cell. This includes structures for sheet/contact resistances, needed for modulator modelling
- **[ACTION]** After compiling list of BBs and FoMs, **Smart** provides most up-to-date data for already measured FoMs.
- Process control data will be fed into compact models and in this way released to designers

- BB data will be released to designers not only through design manual but also captured in PDK.
- **[Action] TU/e + Smart:** Create list of test structures for MPW run SP19 in December.

WP3.5 Demonstrator Design

- Effect presents view on transmitter demonstrator: As of now OOK or PAM formats are envisaged in transmitter circuit for 400 GbE applications with integrated lasers and modulators.
- Technobis requires continuous tunability in about 9 nm range within C band, low linewidth laser. Starting point is 100 kHz linewidth.
- Bright prepared document that holds some laser concepts and requirements on platform capability. Based on that and the possibilities in the platform development, concepts for the BBs will be agreed on.

WP3.2 PDK Content

- Smart foresees periodic release of updated PDK versions, whenever new BBs are in MPW run and properly characterized.
- **[Action] Bright** and **Phoenix** have compiled a document describing what belongs to a PDK, which will be soon shared with everyone.

Minutes from OPEN INNOVATION WP 3 technical meeting – PART II

07-11-2016 15.30 to 16.00

Attendance: Longfei (TU/e), Weiming (TU/e), Roel (SMART), Rui (SMART), Ronald (Bright), Pim (Technobis), Kevin (TU/e), Saeed (Effect), Xaveer (TU/e)

WP3.4 Design Environment

- **[Action] Phoenix** and **Bright** have created a description of the design flow model and will circulate that around.
- Everyone agrees on the importance of automatic “Layout vs Schematic” DRC functionality which will be major part in this project.
- **[Action] TU/e:** Revise WP 3.4 list of milestones and include layout vs schematic task.