

CompactLight
XLS Lineariser Status and Updates
Version 1.2

Date and Time	Friday 12 June 2020 at 10:30 (CEST)
Venue	XLS.General.Vidyo.Room, and Indico
Participants	Graeme Burt, Jinchi Cai, Alejandro Castilla, Gerardo D'Auria, Andrea Latina, Xingguang Liu, Laurence Nix, Bruno Spataro, Igor Syratchev, Xiaowei Wu, Walter Wuensch, and Liang Zhang.
Apologies	Adrian Cross (due to Vydio technical issues).

Preamble

This meeting had as purpose to review the status of the research done in the different element related to the **Lineariser System** for the CompactLight project. All these in views of the upcoming XLS-“Glasgow Virtual” Meeting, and the condensed version of a peer reviewed journal paper, as well as the CDR deliverables preparation. The agenda and contributions can be reviewed in this link: Indico.

1 Comments and Remarks

Below are some highlighted remarks given to and by the presenters.

- **Gyroklystron - Liang:**
 - Circular waveguides used for output (E02).
 - It will require mode converters to an H01 mode (TE01)
- **MBK - Jinchi:**
 - H01 circular waveguides are a must, due to practicality with the flanges and to reduce losses in the network.
- **PC Options - Xiaowei:**
 - It was suggested to focus on the Ka-band and the general integration between the sources, based on Igor’s input (see Action List point 3).
- **SW + Cryogenic Structure - Bruno:**
 - It was highlighted the need of a minimum of two structures and a hybrid to resolve issues with reflections to the sources (see Action List point 8).
- **TW Structure - Alex:**
 - It was suggested to focus on the Ka-band and to not pursue the open structure.
 - Ka-band max 36 MV/m at 0.6 m for ~6 or 10 MV integrated voltage should be optimum.
- **Beam Dynamics - Xingguang:**
 - An injector baseline was just defined a week ago. With this information is possible to work on definitive values for the needed integrated voltage for the linearizer (see Action List point 12).

2 Outcomes

Below are some outcomes reached during this meeting.

- 36 GHz is the baseline for the linearizer.
- H01 low loss circular waveguides are the baseline for the RF network at this frequency.
 - Most or all the components have been designed or are available from scaling.
- Down selection of the structures and source for a baseline should be picked at this stage.
- Graeme will propose a method for evaluating options (see Action List point 2)
- Conceptual drawings and basic layouts are necessary at this point of the project.

Action List

The following are the general comments and remarks presented by the assistants, previous to the closing of the session:

Num.	Action	Responsible
1	Provide Bruno with tables/calculations for the cryogenic load estimation	Graeme
2	Layout a comparison between structures and sources for down selection	Graeme
3	List of needed and available components for the Ka-band	Igor
4	First approx of an integration network design	Igor + Graeme
5	Conceptual drawings of full layout	TBD
6	Layout a 2 SW structure + Hybrid system	Bruno
7	Use input from Graeme to estimate the viability of the cryo-structure	Bruno
8	Complete design including all components to ensure zero reflections back to the source	Bruno
9	Provide Andrea with the wakes estimations of the full structure	Alex
10	Send full structure to Xiaowei for crosscheck of the wakes	Alex
11	Prepare XLS-H2020 talk for next week	Alex
12	Use the injector baseline to determine the needed linearizer voltage	Andrea
13	A panel is to be formed to aid with the down selection using inputs from point 2 of this list	TBD
14	Populate the respective sections on the overleaf document	Everyone

A date for the next meeting via XLS General Vidyo Room, is yet TBD.