From: Mark.Gross@csiro.au
Subject: RE: Calculated spectra - BS HR 0 deg?
Date: April 25, 2012 at 4:37 PM
To: Billingsley_G@ligo.caltech.edu
Cc: Phil.Martin@csiro.au

Hello GariLynn,

Attached are the 0 deg AOI HR (and AR) results for BS 02,03 (these are for H1, L1).

Absorption loss results for BS02: - we can send BS01,04 if you like (at your risk).
But they are the H2 optics - ie. LIGO India - will they have to modified later anyway ?

We currently have PR3-01, PR3-03, SR3-02 and FPR3-01 (failed - needs repolishing) waiting here.
PR3-03 is still being measured but will be ready to go in a couple of days. SR3-02 is currently being packed.

There are a number of thin film design programs around.

Optilayer
TFCalc
Filmstar
Essential MacLeod
and more.

We have a copy of Optilayer - very powerful, very detailed, very expensive and very difficult to use.

Our workhorse program is TFCalc (http://www.sspectra.com/)
Roger has used this since he was born.
It has a rather primitive old-fashioned interface which has hardly changed in 10 years, but it is simple, quite intuitive (as far as these programs go) and is quick to learn (compared with Optilayer). It also does just about everything you could want (and probably a lot more).I don't know the current price, but I believe it isn't outrageous (not like Optilayer ~$10k). There is a demo version that you can download.

I also know others who use their own preferences (eg. Rand used Essential MacLeod) and swear by them.
I think they all get the job done.

Of course to get any of them to work you need to have suitable data files of the refractive index (and sometimes k) of the materials used for the incident medium, thin film layers, substrate and exit medium. These are either in table form (as a function of wavelength) or in parametric form (Cauchy etc descriptions). Most of the programs come with some data files for obvious materials, but you will have to get your own data for the thin film materials (which are different for every vendor).

By the way, Aiden Brooks seems to do a lot of this - does he have a package ?

Rgds,

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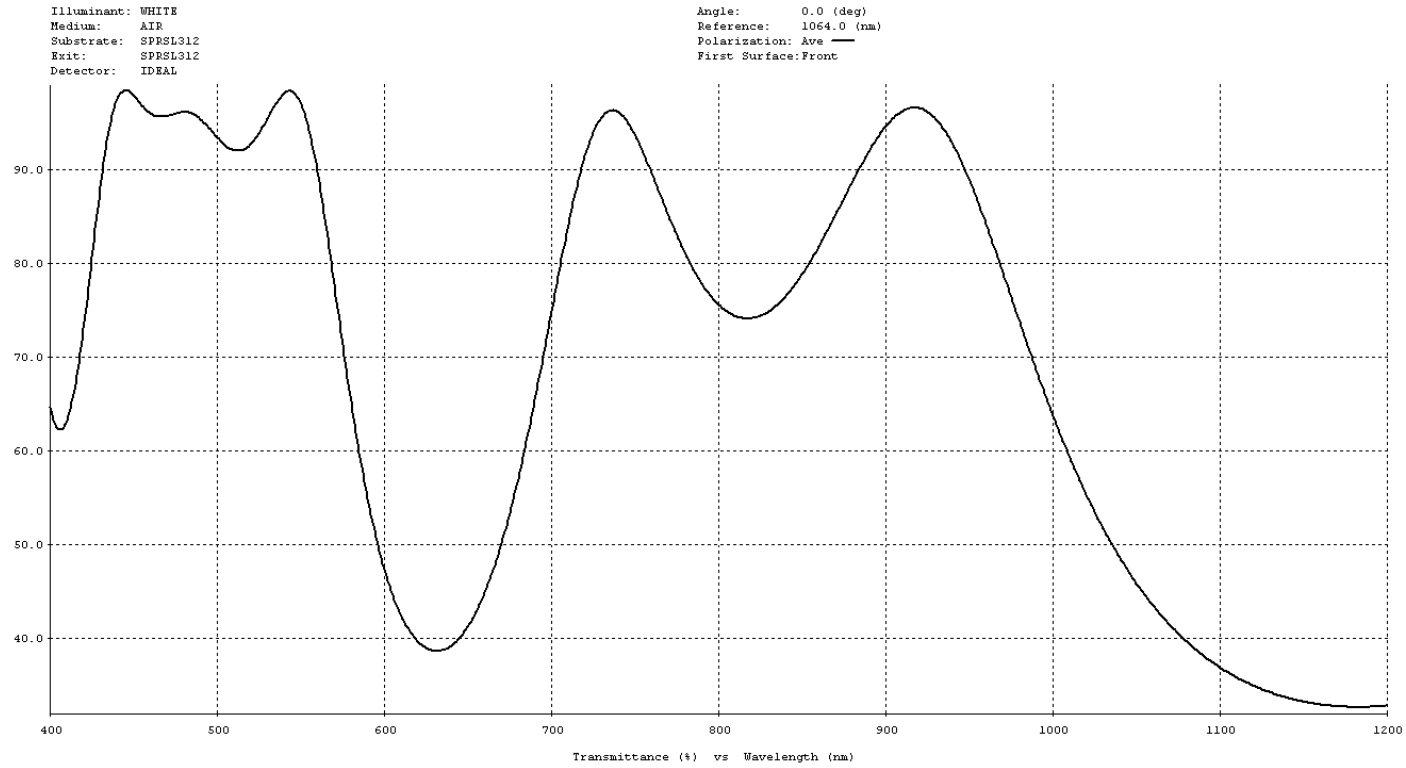
-----Original Message-----
From: GariLynn Billingsley [mailto:Billingsley_G@ligo.caltech.edu]
Sent: Thursday, 26 April 2012 6:44 AM
To: Gross, Mark (CMSE, Lindfield); Martin, Phil (CMSE, Lindfield)
Cc: Gregg Harry; Phelps Margot
Subject: Calculated spectra - BS HR 0 deg?

Would it be possible to send along a calculated spectral response for the (-1 if it matters) Beamsplitter HR coating at an incident angle of zero degrees???
It would be much appreciated as our alignment crew is trying to select a promising wavelength.

I should probably get one of these thin film codes, so I can run these simple cases without bothering you. Do you have any recommendation?

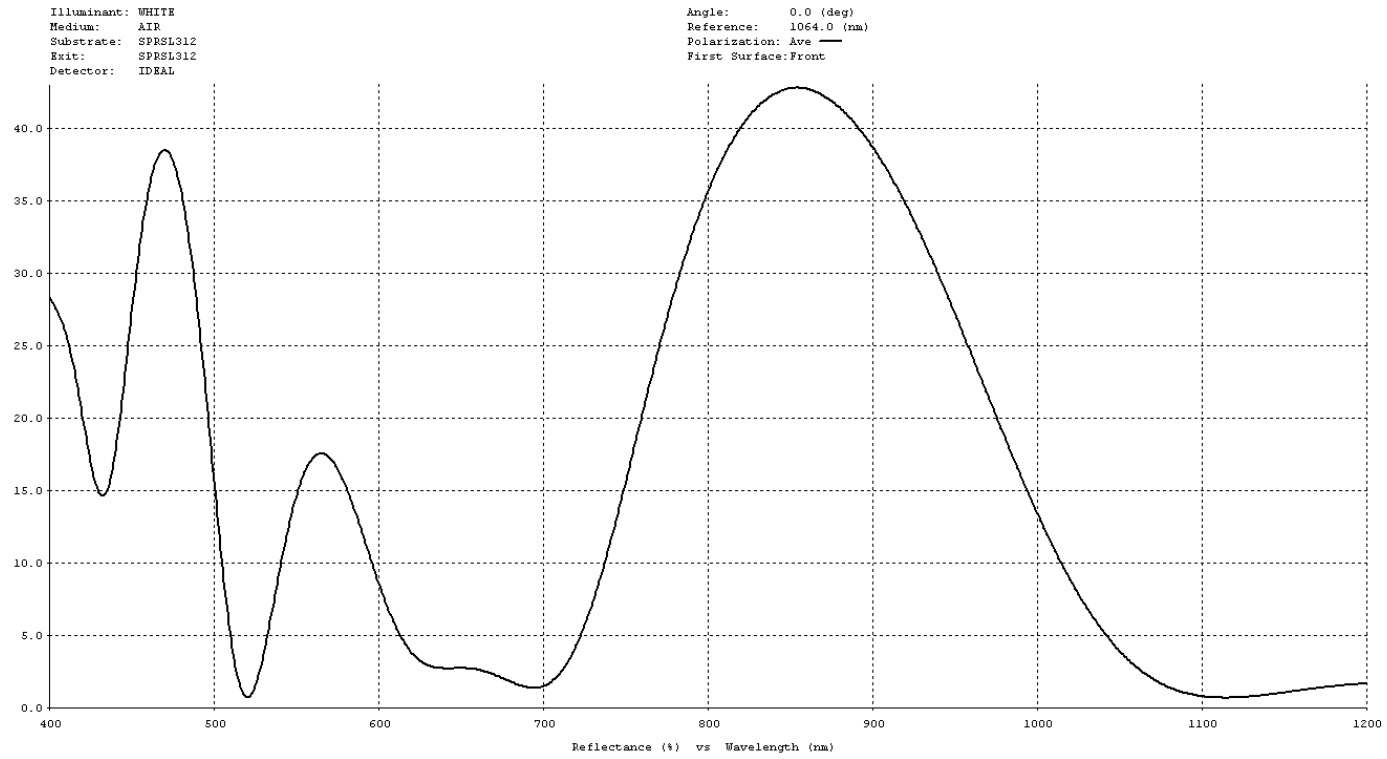
Thanks,
Gari

BS 0 deg AOI.docx



BS 02 and 03 (designed for H1,L1).

HR coating transmittance at 0 deg AOI.



AR coating reflectance at 0 deg AOI (all BS optics)