

**Complex VT Rating Research PMTG Conference Call on Wednesday, December 17  
@ 2 pm ET.**

---

**Attending: Willie du Pont, Paul Jaster, Mike Thoman, Roger LeBrun, Dave DeBlock, Ross McCluney, Ray McGowan**

Paul: Recently had a conversation with Mike Rubin. Away from phone so can't join this meeting. Christian Kohler on vacation. Schedule and details of LBNL Workshop on complex optical systems and NFRC ratings not established yet. TDDs will be an item on the agenda. Rubin is very aware of the issue, but very pro about simulating rather than testing, but the test conditions are still the issue.

Paul: Review where we are: Looking for a method for testing VT of complex products, primarily for TDDs but Roger also wants it for clear domed skylights. Including diffusing glazing is also desired, to be complete.

We were looking at an integrating sphere, but the inputs are suggesting that an alternate method is desired.

Manufacturers want a VT rating, period. A lot of discussion at the IES conference in Savannah. Keith was there. What are the test requirements? We need a committee with knowledge to come up with the parameters to move forward.

Willie: Suggests that we separate this project into two parts. First is what does NFRC want to rate, with TDDs, shading devices, domed skylights, etc. We need the objective. What will go on the label? A specific angle, or several, or a more comprehensive rating leading to annual energy performance. This comes first.

In parallel, a more comprehensive research project to decide what specific measurements are needed. Can't do one before the other because everyone is in a hurry. First ballot the idea of what to be rated. Then we can proceed, after the LBNL workshop to look at longer term requirements.

Mike: What research would be done in the first one?  
Concerned that we don't have enough of the right folks in the room.  
Ross had some ideas. 3 alt azimuths, etc.

Willie: We can do a lot of this with simulations, but we need to know the optical and other properties needed for input to the simulations.

Ross summarized the thoughts of the optical and illumination experts he met with in Savannah on this topic.

Willie suggested that we have limited funding and time.

Paul: What test conditions will we operate with? Solatube thinks it has a test plan that works. Did some outside testing, and had LBL test with Integrating Sphere at several angles. All the independent measurements had good agreement.

**Complex VT Rating Research PMTG Conference Call on Wednesday, December 17  
@ 2 pm ET.**

---

Willie: Ross has proposed multiple input directions, ie 5 directions. If manufacturers can measure that, we are ready to go. From this we can convert these into a single rating number.

Paul: Before we can go ahead, we need the test conditions to rate at. Suggests Ross and Paul put together something on this to get started. The Heschong group already went through this for their Title 24 work. They took average solar altitude for mid-California, ignoring azimuthal effects. We need to be a little more comprehensive.

Willie: What is performance in a building over time?

Paul: Keith was in Savannah with Ross and reported that they are interested in long term comprehensive rating. We are just trying to get something going on test conditions.

Paul: Roger wants conditions to meet conventional domed skylight too. Is this true?

Roger: Conditions regarding light source will be the same, but there are different ways of doing even TDDs. Not all domes are horizontal or on south side of roof. We should be talking about geographical variations.

Paul: Getting to Energy Star is a problem.

Willie: DOE looks to NFRC for parameters to get to Energy Star ratings. This will probably continue. So NFRC is where this work needs to be done.

Paul will get something off initially to Ross. He and Ross will agree and then send out a draft RFP to this group for review and comment before the end of the year. Then we can have a meeting early next year to finalize for the 23 Jan deadline for NFRC. A research project to rate TDDs and domed skylights for visible transmittance.

Willie: Charlie has completed a project to theoretically do this for domed skylights, but didn't include tests. Two more failed at the last meeting, i.e. greenhouse windows. Willie goal to rewrite these by Christmas for Charlie, on skylights. His project was a follow on to original project only at vertical incidence. Has to be tested at off-normal to validate. Purely U-factor, so not really relevant.

Paul: Establish initial conditions and then consider the tests. We'll draft something, send it to this group, then plan to meet in early January to finalize an RFP to send in to NFRC for balloting.

■ Ross McCluney