



Press Release

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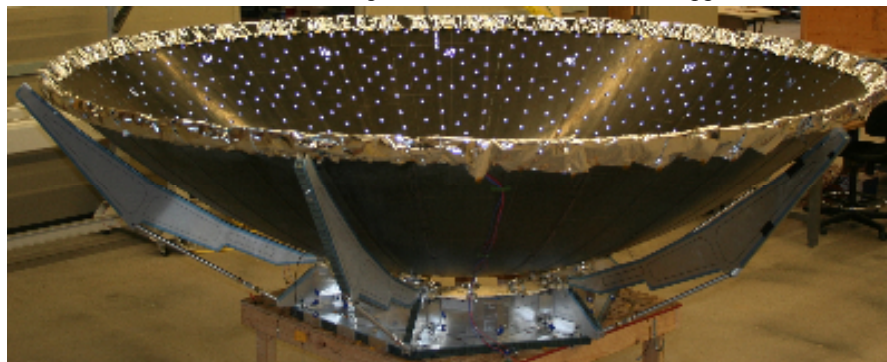
TEMBO[®] Satellite Antenna Reflectors Complete Key Step toward Flight

(Lafayette, Colorado) CTD's TEMBO[®] satellite antenna reflector has completed a key step toward flight qualification. The low cost, large aperture, high frequency, deployable solid surface TEMBO[®] reflector, under development by CTD, successfully completed a Preliminary Design Review (PDR). Representatives from the Naval Research Laboratory (NRL) and the Air Force Research Laboratory (AFRL), both of who support the development of improved capabilities for satellites, conducted the PDR. Program Manager Rory Barrett and Principal Engineer Robert Taylor led the CTD development team. This development effort was funded primarily by Operational Responsive Space (ORS) technology development funds managed by NRL, some Small Business Innovative Research (SBIR) funding managed by AFRL, NASA funding managed by the Applied Physics Laboratory, in-kind support from Boeing and CTD. ORS goals are to provide low cost, space based surveillance capabilities that can rapidly respond to the changing world situation. Missions include information gathering and tactical support for the military. Achieving these goals requires a paradigm shift in the way space based equipment is currently designed, manufactured, and supplied. The reviewers complemented the CTD team by stating, that in the true spirit of ORS, CTD demonstrated in a short period of time and for a modest amount of funding that the TEMBO[®] reflectors can help the Government achieve ORS goals. The TEMBO[®] reflector, enabled by proprietary TEMBO[®] elastic memory composite materials that has been used for other successful satellite deployable structures, has been demonstrated to provide the performance and meet the cost goals for ORS. In addition these new space capabilities can be employed for real-time and rapid response for earth observation, which can include weather and climate monitoring, search and rescue, and tracking of goods while in transit. CTD will continue by designing, building and ground testing a full scale, fully operational demonstration unit. This will provide satellite mission planners and designers sufficient performance experience to incorporate the TEMBO[®] reflector onto their satellites.

CTD is also developing TEMBO[®] reflectors for commercial communications satellites. The goal for commercial satellites is to transmit more data for a lower cost. The commercial satellite industry is moving to provide ubiquitous, wireless communications from space, all over the world. To achieve this, commercial satellites must include next-generation antenna reflectors with both increased size and the ability to operate at higher frequencies. Current estimates indicate that TEMBO[®] reflectors will offer higher frequency and enable commercial satellites to replace four 3 meter reflectors with four 5 meter TEMBO[®] reflectors, nearly tripling the available reflector area and the product (i.e., data capacity) the satellite operator will be able to supply to their customers.

Key accomplishments for the TEMBO[®] reflector leading to completion of the PDR included:

- Demonstrated the high frequency, Ku/Ka band, surface accuracies
- Successfully packaged and deployed without damaging the reflector or impacting surface accuracy
- Rf testing showed efficient data transfer capability
- Thermal distortion tests showed that reflectors meet requirements for most reflector applications



TEMBO[®] satellite antenna reflector model used to provide test data to support preliminary design review

CTD will display a TEMBO[®] satellite antenna reflector at Responsive Space Conference 6, April 28 – May 1, 2008