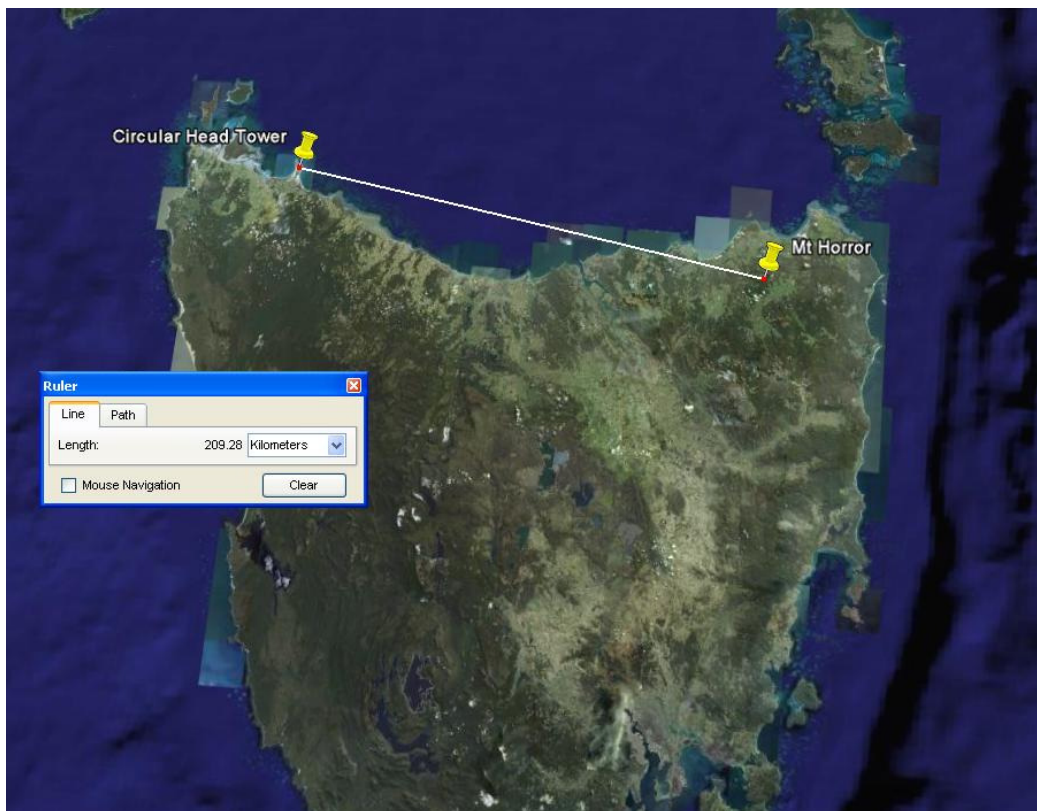


## 209 km Light Test “Failure”

By Rex Moncur VK7MO

On 29 October Joe VK7JG and Rex VK7MO attempted a light test over a 209 km path across Northern Tasmania from Mt Horror to the Circular Head Tower. It was hoped that by elevating the TX end at Mt Horror (676 meters) this would reduce the scattering angle and be of some benefit. However, it appears the up draft caused by the Mountain caused the moist air to form clouds or fog and no signals were seen at all in two hours of testing at 1 MHz bandwidth. Never-the-less, Alvin, VK7NDQ, took some excellent photos at the TX site some of which are included in this report for interest.

### PATH



Rex VK7MO operated the receiver at Circular Head and Joe VK7JG operated the transmitter at Mt Horror.

### EQUIPMENT

The equipment was 10 mm square APD receiver and the 60 Luxeon array - the same for the 118 km test as described at:

[http://reast.asn.au/optical/118\\_km\\_Cloudbounce\\_Final\\_.pdf](http://reast.asn.au/optical/118_km_Cloudbounce_Final_.pdf)

## **PREPARATIONS**

Prior to the tests we set up a close range audio trial of the computer communications program JASON with the aim of using this if signals were weak. Advice from Yves F1AVY is that in its slow mode JASON is capable of working to -45 dB compared to WSJT at -28 dB – even though JASON does take some 40 minutes to exchange two callsigns.

## **WEATHER CONDITIONS**

On the morning we checked with the forecaster at Hobart Regional Office of the Bureau of Meteorology and were advised as follows for the middle of the path:

1. A thin layer of middle level cloud expected at around 9000 feet
2. Some high level cirrus
3. A few patches of low level cloud

From what was seen from the Circular Head end the forecast was accurate and all looked very promising. Unfortunately almost from the time the TX was set up by Joe VK7JG cloud or fog rolled in. Joe felt this was due to moist air rising from the sea up the mountain and condensing. It seems that in future we need to also seek the forecaster's advice of the possibility of low cloud at each end of the path as well.

## **EXTERNAL LIGHT Vs DARK TEST AT CIRCULAR HEAD**

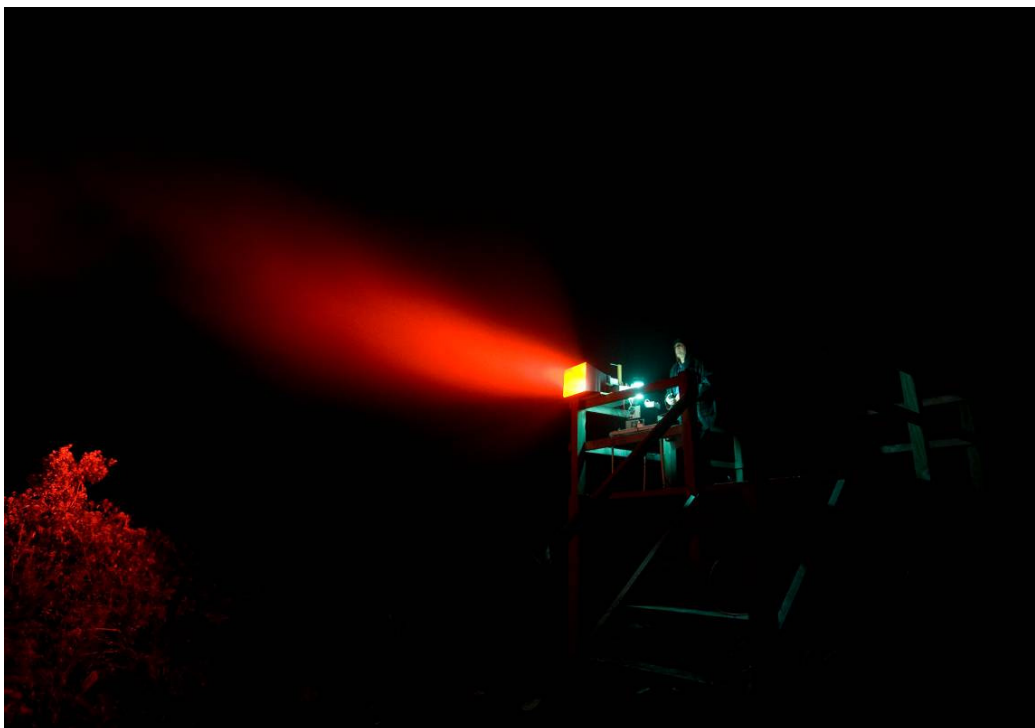
This test showed:

External light current 18 nA

Dark test 10 nA

This differed significantly from the 224 km test where the external light was hardly above of the dark test. On both occasions there was no moon present. The difference was that there were no significant clouds present for the 224 km test where-as clouds were present for this test. Thus it seems that when clouds are present as is required for long distance communication the external light from the clouds (eg from cities in northern Tasmania) is the limiting factor on receiver performance with the APD.

**PHOTOS BY ALVIN VK7NDQ AT TX SITE**



60 Luxeon Array Transmitter at Mt Horror



Joe VK7JG operating the Transmitter



Transmitter beam being reflected by clouds or fog.

**PHOTOS AT RECEIVER SITE BY VK7MO**



RX direction with clouds over the village of Stanley



Receiver mounted on Roof racks - from Circular Head lookout car park.

## **CONCLUSIONS**

All we can conclude from this failed test is:

- We need to know a lot more about the weather in planning future tests
- Contrary to our earlier conclusion that the APD receiver is the limitation on a moonless night it appears that when clouds are present the light from clouds (such as from the towns in Northern Tasmania) is still the limitation on system performance.