

Keck's Portable UHF Radio Repair and Maintenance
Blake Stene

W.M. Keck Observatory
Research Supervisor: Jason Chin
Home Institution: Hawai'i Community College

In order to ensure that successful observations occur on the summit of Mauna Kea at the Keck observatory, effective communication is important. Portable radios are one way Keck personnel are able to communicate point to point at the observatory. In addition to safety, it is also good for coordinating personnel so that things get done more efficiently. Fifty-two radios were checked with an analyzer to verify proper transmission and receiving. Data was collected and uploaded into the new database. A new database using Excel was made to make it easier to read the data. To analyze each radio, three tests were conducted. First, the wattage of each radio was determined. Next, the receiver, transmit sensitivity and audio on each radio was checked. Finally, Continuous Tone Coded Sub-audible Squelch (CTCSS) or Private Line (PL) was evaluated. This makes it possible for only users with the same (PL) to hear one another without having to hear other users on the same frequency. All tests were performed using an analyzer to check for the power output and audio sensitivity. Nine of the fifty-two radios that were checked were not working properly. They will be sent out for repair or to be checked by an authorized dealer. All the data collected has now been inputted into a new database that will be used to document each radio.