Ground Sphere CubeSat Ground Station - Milestone # 205: Test Prototype 1

Status:	Closed	**Priority:**	Normal
Author:	J. Simmons	**Category:**	
Created:	10/09/2013	**Assignee:**	Aaron Harper
Updated:	07/13/2014	**Due date:**	12/28/2013
Subject:	Test Prototype 1		
Description			

History

11/03/2013 04:37 pm - Aaron Harper

- % Done changed from 0 to 10

The Ramsey preamp was a no go. It was simply unable to amplify a signal higher than 630MHz without adding so much noise that the signal got lost in it. We have received the new preamp, and once this has been integrated with the antenna, we will be able to move forward with testing again.

12/07/2013 11:39 am - Aaron Harper

- % Done changed from 10 to 40

G0RMF (David Bowman's) preamp is complete and DC testing shows promise. Will lab test RF Today in the Evening. Test is only pass/fail, not parametric since my current equipment only goes to 650MHz. This test will not yield relevant gain or noise figures or 915MHz, only "ballpark" measurements.

12/07/2013 03:43 pm - J. Simmons

- Status changed from New to In Progress

- % Done changed from 40 to 20

Only required tests at v0.1 are for TR 1.1.2.

12/22/2013 04:29 pm - Aaron Harper

- % Done changed from 20 to 50

Demonstrated reception of signals using ground station hardware using SDR# software a dozen times in non-ideal conditions. Unit has been rugged enough for school children to poke at with no damage or issues. Unfortunately, these tests were **NOT** in the 915MHz band, but rather at 162 and 446 MHz with one test at the second harmonic of the UHF signal (2*446 or 892MHz). While this is close, I do not feel that it meets the full criteria of TR 1.1.2, mainly because only the test at 915 MHz will allow us to verify the gain characteristics of the amplifier and antenna. The 915 MHz transceivers are being built now, and will be ready for a lab test of the Ground Sphere hardware on the morning of December 23rd.

Scoring criteria beyond this point is:

- 10% for successful lab test (pick up signal at 915 MHz) Scheduled 23DEC2013
- 10% for spread spectrum lab test (pick up wide band of frequencies centered on 915 MHz, necessary for full band reception of satellite hardware) Scheduled 23DEC2013
- 10% for attenuated lab test (tests SDR AGC and antenna gain under known conditions) Scheduled 23DEC2013
- 10% for successful field test (picks up signal outdoors at arbitrary distance) Scheduled 26-27DEC2013 depending on local weather

- 10% for successful scale field test (picks up signal at calculated distance, verifies link budget data) Scheduled 26-27DEC2013 depending on local weather

12/23/2013 12:21 am - Aaron Harper

- % Done changed from 50 to 80

Basic lab test complete at 2035 22DEC13
Spread spectrum lab test complete at 2100 22DEC13
Attenuated lab test complete at 2145 22DEC13

I am completely satisfied by the performance of the antenna. Not only was I able to pick up the signal, I was able to pick it up, I was able to pick up the signal at -30dbm at 4 meters without the use of the preamp.

Remaining tests to be completed by Southern Stars upon receipt of the prototype. It will be shipped 23DEC2013 via FEDEX 2 Day.

12/24/2013 09:13 am - J. Simmons

- % Done changed from 80 to 20

Resetting percent complete to account for need to document and complete [[Test 1.1.2 Instructions]]. At present, Aaron has completed smoke tests similar to TR 1.1.2-1, but until documentation is complete and the tests have been conducted with the Southern Stars radio, we cannot take credit for these tests.

12/24/2013 09:25 am - J. Simmons

- Due date changed from 11/01/2013 to 12/28/2013

Per meeting on 12.19.2013. Prototype 1 is currently en route to Southern Stars for testing of TR 1.1.2, which when complete will close out this milestone.

12/24/2013 09:34 am - J. Simmons

- Start date changed from 10/26/2013 to 12/22/2013

07/13/2014 03:15 pm - J. Simmons

- Status changed from In Progress to Closed