Parrot	USER TEST REPORT Abrasive tests	document version : 2.2 revision date: 22/03/2013

1. Product description

1. Project :	Hawaii
2. Product reference :	Hawaii DV2
3. Date of the test :	14/08/2013
4. Responsible:	Protocol : N. STEINMETZ Test : F.GOUBLE
5. place of the test :	Parrot office in Paris

2. Test Procedure

1. Goal:

Simulate abrasion of the ground when plugging the product into the ground. Test at ambient temperature to the contrary of DV1 tests (cold, ambient and hot temperatures were tested).

2. Procedure:

Ambient temperature : +23°C
Number of insertions at ambient temperature : 100
Type of soil : gravel and sand

Test protocol :

- Perform proper working condition check of the sample under test before beginning the test
- Prepare one pot full of gravel
- Prepare one pot full of sand
- Perform following tests

Temperature	+23°C
Number of insertions in the pot full of gravel	50
Number of insertions in the pot full of gravel	50

Note : 12 insertion were performed during DV1 tests (x4 at cold, x4 at ambient, x4 at hot temperature). Because of a lack of time during DV2 validation, it has been decided to proceed to tests at ambient temperature only. Number of insertion has also been increased after discussions with Flavien MORRA from mechanical team. Previous amount of insertion was based on a removal of the sample every two months (2 years warranty). This didn't take into account customers that could use a single Hawaii for several plants and who would change pots every week for example. That's why the total amount has been increased up to 100 insertions.

3. Expectations:	- No breakage of any part of the Hawaii. - Cracks can be allowed if they don't lead to breakage and remain constant between tests. - All sensors shouldn't show big deviations between proper working condition before and after the test sensor values - No need to check waterproofness ; this test only affects "inside ground" parts. - Parrot logo should still be legible Max deviations permitted for sensors : - Temp sensors : ±2°C - Humidity, fertilizer, light sensor : ±20%
3. Reference	
1. Tested product serial number:	Device under test : DV1 N° 9003b7c72a81 Benchmark : ProtoB2 #106
2. Software version:	<u>Device under test :</u> Bootloader : 2013-06-10_hawaiiProduction-1.0_protoB-bootloader Firmware : 2013-06-13_test-1.0-beta7-data-saved-10s_protoB-bootloader <u>Benchmark :</u> Bootloader : 2013-05-15_hawii-1.0-beta6_protoB-bootloader Firmware : 2013-06-13_test-1.0-beta7-data-saved-10s_protoB-bootloader
3. Test equipment reference:	Binder MK53 climatic chamber
4. Result	
1. Events sequence:	The sample under test underwent the following test before this one : - Salt Spray test Test according to protocol Pots used for the test (sand on the left, gravels on the right) : 

2. Results:

Results :

1) Before test proper working condition results :

Deviation chart in comparison with proto B2 #106 benchmark sample

Sample	Humidity	Light	Fertilizer	Soil temp	Air temp
Benchmark	673	12814	1468	738	756
DUT*	697	10729	1359	717	736
Deviation	**+3,5%**	**-16,2%**	**-7,4%**	**-2,8%**	**-2,6%**

(*) Note : DUT stands for Device Under Test

IP check : not performed as explained in the “expectation” chapter

2) After test proper working condition results :

Deviation chart in comparison with proto B2 #106 benchmark sample

Sample	Humidity	Light	Fertilizer	Soil temp	Air temp
Benchmark	654	13263	1467	762	770
DUT*	695	11889	1474	744	768
Deviation	**+6,2%**	**-10,3%**	**+0,4%**	**-2,3%**	**-0,2%**

(*) Note : DUT stands for Device Under Test

3) Pictures after test

Parrot logo is still legible ; no issue found on the fork.

4) Test criticism :

None

5) Conclusion :

- All sensors are OK. Deviations respect expectations.
- Mechanical parts are OK. Logo is still legible

5. Conclusion

OK