

# Physical limitations of a Android smart phone when used as a platform for mobile canine computer interaction

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## Abstract

There has been a great deal of research recently into human computer interaction, but we have largely ignored the rest of the animal kingdom. There is no simple and effective way for any animal, other than humans, to do even simple computing tasks. The first step in changing this is to find devices that non-humans can safely and effectively interact with. In this paper we look at the feasibility of using a G1 Android phone for mobile canine computer interaction. Specifically, we'll explore the durability limitations of the phone during use by a canine.

**Keywords:** mobile devices, canine mobile computer interaction

## 1 Introduction

As American society becomes more connected the demands to stay in constant contact have created a ever increasing demand for mobile communication devices. Why should these mobile devices be limited to only human use? Could they be adapted to our 4-legged companions?

Since canines lack dexterity in their appendages, a canine device would have to be able to take input through other forms. Canines generally use their teeth to interact physically with the world around them. The current generation of mobile devices weren't designed for teeth as an input device. The durability of mobile platforms presents a major problem in mobile canine computer interaction (mcci). We set out to see if the android G1 could handle the stresses of being used daily as a mcci device. A bite resistance test is a logical choice for a first test.

## 2 The Test

The bite test is pretty straight forward in nature. Our test dog was a young female Labrador Retriever. Labrador Retrievers are the most popular breed of dogs in America according to the American Kennel Club [2009]. Labs on average weigh close to 70 lbs, making them larger than many other household dogs. The G1 phone is given to the test dog, who is allowed to use it. After a set amount of time, the phone is taken away from the dog, and tested for damage.

Once given the phone the test subject began to chew on it. Bites one, two and three did achieve rather impressive results. Upon observation the protective backing to the phone was the first part to crack and eventually detach. Additional bites punctured the touch screen. A more delicate pressure could have prevented this. But there was a lack of comprehension in the instructions on the part of the test subject. Later examinations concluded that a stronger glass on the touch screen could be beneficial. Bullet proof glass probably wouldn't be necessary, but bite proof would be an advantage. The plastic casing around the phone suffered many punctures. Although these severely hurt the ascetics of the phone, they were not deep enough to damage the interior electronic components. Like the glass, the casing also needs to be strengthened. The subject also



**Figure 1:** Notice the damage to both the screen and the plastic casing.

had difficulty seeing the screen on the device while she was using the chew interface.

## 3 Results

After the test, we attempted to use the phone. After all the damage it sustained, it still able to turn on. The screen however couldn't display complete images. We concluded that in its current form, the G1 phone is not well equipped for mobile canine computer interaction. With a few changes to the casing and touch screen it could be made durable enough to be used as a mcci device. The real limiting factor to the phone is that the subject couldn't see the screen while interacting with the device. A truly effective mcci device will need to utilize other methods of data output.

## 4 Conclusion

The test subject seemed to enjoy the sensation of interacting with the device. However her casual use of the device resulted in some severe damage to the device, and revealed some limitations to this method of interaction. To be used as a mcci device the G1 phone would need to have its screen and casing strengthened. While interacting with the device the subject couldn't see the screen. The G1 could be fitted with an alternative to the screen. This alternative could utilize existing hardware by using the phones built in vibrate mode, or be fitted with an attachment. Perhaps this attachment could take advantage of canines advanced olfactory sense, which is currently untapped by the G1. Once the phone is modified with these few basic changes it will be a truly powerful mcci platform.

## References

AMERICAN KENNEL CLUB, 2009. AKC Dog Registration Statistics. [Online]. Available at: <http://www.akc.org/reg/>.

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