



By Simon "Scorpei" van de Berg

First release date: 11th January 2008

Current release: 11th January 2008

Version: 1.0a Public

Special thanks to:

<http://www.bamboogaming.com/>

<http://www.kickgaming.com/>

<http://www.mod-chip.com/>

<http://www.teamcyclops.com/>

The Wiikey Team

licensing



The "Naamsvermelding-NietCommercieel-GelijkDelen 2.5 Nederland" applies on this work. Read this license in Dutch or English ;

Dutch: <http://creativecommons.org/licenses/by-nc-sa/2.5/nl/deed.nl>

English: <http://creativecommons.org/licenses/by-nc-sa/2.5/nl/deed.en>

Content

- Licensing Page 2
- Part 1: Introduction Page 3
- Part 2: Testing method Page 4
- Part 3: Results Page 5 - 7
- Part 4: Conclusions Page 8
- Part 5: Discussion + Contact info Page 9

Part 1: Introduction

Why o why did I think of testing this.... I've put quite a few hours in these tests, mainly because I wanted to test this properly. I've inserted discs in my Wii over 560 times, just to get results I could work with. Thankfully I did notice something interesting in the results, a few things to be exact.

I started testing the compatibility of media of my Wii because I bought a set of +rw discs which didn't seem to work. Before taking them back to the store saying it was bad media I figured I would give it one more go. Now for some reason I switched mod-chips earlier and surprise surprise, the +rw disc which I thought didn't work with my Wii suddenly started up and I was greeted by SDload! Because I couldn't quite believe what happened I switched around the chips again and indeed the other chip didn't work with the +rw discs. Putting the chip back in that worked before made me able to run SDload again.... Both chips advertise with being able to run +rw (and -rw) media though.

So I started thinking “ *Maybe more of the media I rejected in the past wasn't bad media. Maybe there was a similar situation with those discs. Let's test!*”.

The base question of my research in this paper is:

Is there a difference in (DVD - r / DVD +r / DVD -rw / DVD +rw) media support of the Wii when using different mod-chips?

Just to make this clear, I'm not recommending media or chips of any kind to anyone. I am only researching IF there is a difference in media compatibility when I use different mod-chips with MY Wii. Media I use here that works might not work for you, it could also well be it does work. Results in general could differ from mine when you test it.

Part 2: Testing method

How to test this in a correct and scientific manner so I can actually use the results I get.... First of all I wanted only one variable, the mod-chip. That meant I needed to use the same Wii, with the same drive, with the same discs for each test. Also, as performance might not be black & white (working and non working) I would have to do a few tests. Another factor is that discs from the same brand and the same media code might not always be similar in quality.

After thinking things over a while I decided to use 3 discs from each mediacode and at least 2 batches of 3 discs from each dvd type (for as far as available to me). That results in these discs:

<i>DVD-r</i>	<i>DVD+r</i>	<i>DVD+rw</i>	<i>DVD-rw</i>
3x Printable MCC 03 RG20 Verbatim	2x Normal INFOME R20 Philips	1x Normal MKM A02 HEMA	3x Normal OPTODISCW004 Imation
3x Normal MCC 03 RG20 Verbatim	3x Normal OPTODISCOR8 HEMA	2x Normal OPTODISCOP4 HEMA	
3x Normal MCC 03 RG20 Imation	3x Normal Plasmon2C01 HEMA	2x Normal RITEK 004 MAXELL	
	3x Normal Sony D21 Sony		

As you can see I have one mediacode DVD-r, but three different brands/batches. I have 4 different mediacoded discs DVD+r. 3 Different DVD+rw mediacodes and one DVD-rw mediacode.

Of course in order to test a disc fully I needed to test it more then once. I settled on inserting each individual disc 5 times with each chip. So the test routine was set up as follows:

1. Connect the mod-chip one wants to test (thanks to my external install that was a breeze; http://wii.scorpei.com/Guides_external-TSSP.html)
2. Set settings to default (no region changes, no speed changes, etc.)
3. Insert a disc (with compatible content of course) once the system is in the Wii menu
4. Go in the disc menu and start the game, let it run for about 15 seconds (assuming the Wii didn't already crash and the disc is read)
5. Write down the results, remove the disc and hard reset the Wii (get the Wii light red)
6. Repeat steps 3 through 5 this at least 4 times with one disc (so a total of 5 tests are done) then do the same with 2 other discs of the same batch, brand and mediacode if available (so in total 3 different discs of that type are tested)

Part 3: Results

I've performed the tests as described above with three mod-chips: the WiiD, the CycloWiz and the WiiKey. All three chips have updates available. My WiiD sample was already updated to the latest version (0.2) available at the time and I had no way of downgrading it so I couldn't test an old update. I had finished my research when I found that the WiiD team had just released a new update, however due to the results I have decided not to test the new update at this time. With the two other chips however I was able to compare updates.

I also wanted to test the Wi-iC so I requested a sample from <http://Bamboogaming.com/>. When I received the sample and tried to upgrade it however I found that the update DVD was no longer available on the Wi-iC homepage and that I was unable to update via SD. After trying for a while and still not being able to upgrade I decided not to test the Wi-iC as their stock firmware only has support for DVD-r or bitset DVD+r.

For the CycloWiz I tested versions 3.5 and 3.6. However this update doesn't include any new media support according to the release information so I only did samples taken at random to see if there was any significant difference. The WiiKey team however announced that with their 1.9b to 1.9g update they had nearly done a complete rewrite. Because of that comment I tested both WiiKey versions fully. So I end up with these chips:

Fully:	WiiD v0.2
Fully:	CycloWiz 3.5
Samples taken at random:	CycloWiz 3.6
Fully:	WiiKey 1.9b
Fully:	WiiKey 1.9g

After a while of testing I found that there are four different outcomes of a test:

1. The disc isn't read (“cannot read disc, read Wii manual”)
2. The disc crashes the Wii (in the disc channel or in the Wii main menu)
3. The disc runs perfectly fine
4. The disc crashes after the disc channel (which can't be fixed by removing and then reinserting the disc)

After writing down the results I clarified them and put them in the table on the next page. Each mod-chip has its own column and each disc it's own row. The four sub columns each represent a result as mentioned above. The first sub column represents the disc isn't read, the second it crashes the Wii, the third it runs perfectly fine and the fourth resembles crashing after the disc channel. The roman numbers in the columns represent the number of times (out of 5 tests) the result was achieved. The colour of the numbers shows what the most common result was.

Green: No problem, perfect boot each time

Orange: Mostly fine but with one or two exceptions

Red: Mostly crashing after disc channel

Deep red / purple: Mostly not read

Blue: Mostly crashing on insertion (either in the disc channel or in the main menu)

[?] Is because in between the tests the disc was so damaged it was no longer read (not even by chips known to read the disc properly)

The total numbers on the last row are the roman numbers summed up.

<i>DVD-type</i> <i>MediaCode</i> <i>Brand</i>	<i>WiiD 0.2</i>				<i>CycloWiz 3.5</i>				<i>CycloWiz 3.6</i>				<i>WiiKey 1.9b</i>				<i>Wiikey 1.9g</i>			
DVD - r printable MCC 03 RG20 Verbatim			✓				✓				✓		I	I	III				✓	
DVD - r printable MCC 03 RG20 Verbatim			III	II			✓				✓				✓			III	I	
DVD - r printable MCC 03 RG20 Verbatim			✓				✓				✓				✓			✓		
DVD - r MCC 03 RG20 Verbatim			✓				✓				✓				✓			✓		
DVD - r MCC 03 RG20 Verbatim			✓				✓				✓			I	III			✓		
DVD - r MCC 03 RG20 Imation				✓			✓				✓			I	III			✓		
DVD - r MCC 03 RG20 Imation			✓				✓				✓				✓			✓		
DVD - r MCC 03 RG20 Imation			✓				✓				✓				✓			?		
DVD + r INFOME R20 Philips			✓				✓				✓				✓			✓		
DVD + r INFOME R20 Philips			✓				✓				✓				✓			✓		
DVD + r OPTODISCOR8 HEMA			✓				✓				✓				✓			✓		
DVD + r OPTODISCOR8 HEMA			✓				✓				✓				✓			✓		
DVD + r OPTODISCOR8 HEMA			✓				✓				✓				✓			✓		
DVD + r Plasmon2C01 HEMA			✓			✓			I				I	II	II			✓		
DVD + r Plasmon2C01 HEMA			✓			III	I	I	I	I			III	II				✓		
DVD + r Plasmon2C01 HEMA			✓		II	III			II				I	III				✓		
DVD + r Sony D21 Sony			✓				✓				✓			✓			✓			
DVD + r Sony D21 Sony			✓				✓				✓				✓			✓		
DVD + r Sony D21 Sony			✓				✓				✓				✓			✓		
DVD + rw MKM A02 HEMA			✓		II	III			I						✓			✓		
DVD + rw OPTODISCOP4 HEMA			✓			✓			III						✓			✓		
DVD + rw OPTODISCOP4 HEMA			✓			✓			II						✓			✓		
DVD + rw RITEK 004 MAXELL			✓				II	III	I	I				I	III			✓		
DVD + rw RITEK 004 MAXELL			✓			✓			I	I					✓			✓		
DVD - rw OPTODISCW004 Imation	✓					✓			III				✓				III		II	
DVD - rw OPTODISCW004 Imation			✓				II	III		II					✓			✓		
DVD - rw OPTODISCW004 Imation				✓				✓			III				✓				✓	
Totals:	5	0	118	12	4	34	85	12	1	9	10	1	16	12	102	5	8	0	114	8

Part 4: Conclusion

So what does this all mean:

The first and foremost conclusion is that there really is a difference in media compatibility between chips.

One disc that all chips were unable to read (all resulted in a crash after the disc channel) was the last disc on the list: DVD-rw OPTODISCW004 from Imation. That leads me to think that there might be a problem with that disc. This mediacode / batch seems generally touch and go as all three chips do not quite like the first one, yet all (at least partially-) like the second and as mentioned none like the third.

The CycloWiz team indeed only added Super Mario Galaxy support to their 3.6 firmware upgrade as performance wise it seems to be similar to 3.5. When compared to the other chips the CycloWiz seems to be worst when it comes to rewritable media (36 problems out of 40 tests as opposed to 14 problems out of 40 from the WiiKey 1.9b which is the second worst in rewritable media). It does seem to be (though that could be a measuring inaccuracy) better in -r then the other chips tested.

The WiiKey update from 1.9b to 1.9g really also improves the media compatibility, not just adds galaxy support. As you can see the first (nearly fully) unsupported DVD+r Plasmon2C01 HEMA discs are supported in 1.9g. There is however a strange result with the first DVD+r Sony D21. Both the WiiD and the CycloWiz read that disc fine however the WiiKey refuses to read it. It does however read the two other Sony D21 discs fine.

As for the WiiD v0.2, I am quite surprised at the results it produced. As a chip that is relatively unknown compared to the WiiKey and CycloWiz it performs really good. Given it doesn't support Super Mario Galaxy type protection but the media support is nearly the highest of all the chips I tested (118 running fine out of 135 tests; 87,4%). The WiiKey 1.9g is however slightly higher with 114 running fine out of 130 (87,7%). The spike in the results at the first DVD-r MCC 03 RG20 Imation is rather strange though.

Successes in % (over all discs including those suspected to be non-functional except for [?] with WiiKey 1.9g):

<i>Mod-Chip</i>	<i>DVD-r</i>	<i>DVD+r</i>	<i>DVD+rw</i>	<i>DVD-rw</i>	<i>Total</i>
WiiD v0.2	82,5%	100,0%	100,0%	33,3%	87,4%
CycloWiz 3.5	100,0%	74,5%	8,0%	13,3%	63,0%
CycloWiz 3.6	100,0%	69,2%	12,5%	25%	48,6%
WiiKey 1.9b	90,0%	74,0%	96,0%	33,3%	79,3%
WiiKey 1.9g	97,1%	90,9%	100,0%	33,3%	87,7%

Please bare in mind that the CycloWiz 3.6 numbers aren't fully comparable to results of other chips due to the fact that the tests done were samples at random. The 3.6 tests were only done to show that performance of the CycloWiz 3.6 isn't different from that of the 3.5. Also bare in mind that only one DVD-rw mediacode was tested and this media seems to be touch and go thus possibly lowering the -rw % a lot.

Part 5: Discussion + Contact info

A few things that might have been done better or are left to be researched for others:

1. More DVD-r tests. I've only been able to use one DVD-r mediacode which was MCC 03 RG20. More codes = better conclusions
2. More DVD rewritable tests. The main differences seem to be in DVD rewritables. Specifically one could look at the Imation OPTODISCW004 as it seems to be touch and go media.
3. Better testing of the 3.6 update. Although I don't think results will be different from those of the 3.5 update there might be differences. More tests will allow to prove or disprove that.
4. Generally more tests of media! The more people test this in a professional manner the clearer differences become.
5. More chips! Especially the homebrew chips. I didn't cover any homebrew chips (yet) but I am wondering how they would perform.
6. And lastly, 'why is there a difference between these chips?'

If anyone wants to contact me feel free to send me an email at TBGTDSHB@scorpei.com or place a message on my news blog at <http://blog.scorpei.com/>.