Taste of Research
Gough Yumu LUI
Engineer's Log Book

Week 11

- Monday 7th February 2011

Afternoon meeting with Binghao and Thomas as Thomas rescheduled the meeting to the afternoon since he had to wait for a package to arrive at home. It was decided to meet at 2pm – I was more than an hour early, but Binghao was a tad late from a function. Main items on the agenda were the results – I didn't know how to make sense of the indoor results, but we focused on the outdoor results. Overall, we could tell there were significant differences in the cards behaviours from the slopes and intercepts, there were some unusual differences in SD which can be explained by looking at the temporal behaviour of the cards. One item to note was that the choice of 30cm for temporal behaviour was too close – it was suggested to look at a range of distances – this I should update. Furthermore, the data summary tables should also be exported to Excel for later analysis.

Second item on the agenda is the finalization of the poster which is due in to Chloe Fong by 4pm on Wednesday. Overall, Thomas was happy with the copy, but there were to be come issues emphasized – i.e. why the RSSI's are different, and to make the figures and legends easier to read by enlarging the font. Also, I needed access to the devices that the uni has in order to take pictures of them for inclusion in the poster. Thomas also seemed happy about the speech, however, it is a bit long and I still haven't revised it yet, nor have I rehearsed it much.

Third item on the agenda was the final report – to which I have to elaborate significantly on the causes of RSSI differences. It was accepted that I can do the report in Microsoft Word. I have no real idea how to start a report, however, I promised that when a draft was ready, it would be posted online, however, the poster is my main concern for now. I just remembered that I would also have to write a report for my Industrial Training requirements.

It is unfortunate that none of the manufacturers have replied to my e-mails for more information. They probably just don't care too much about us.

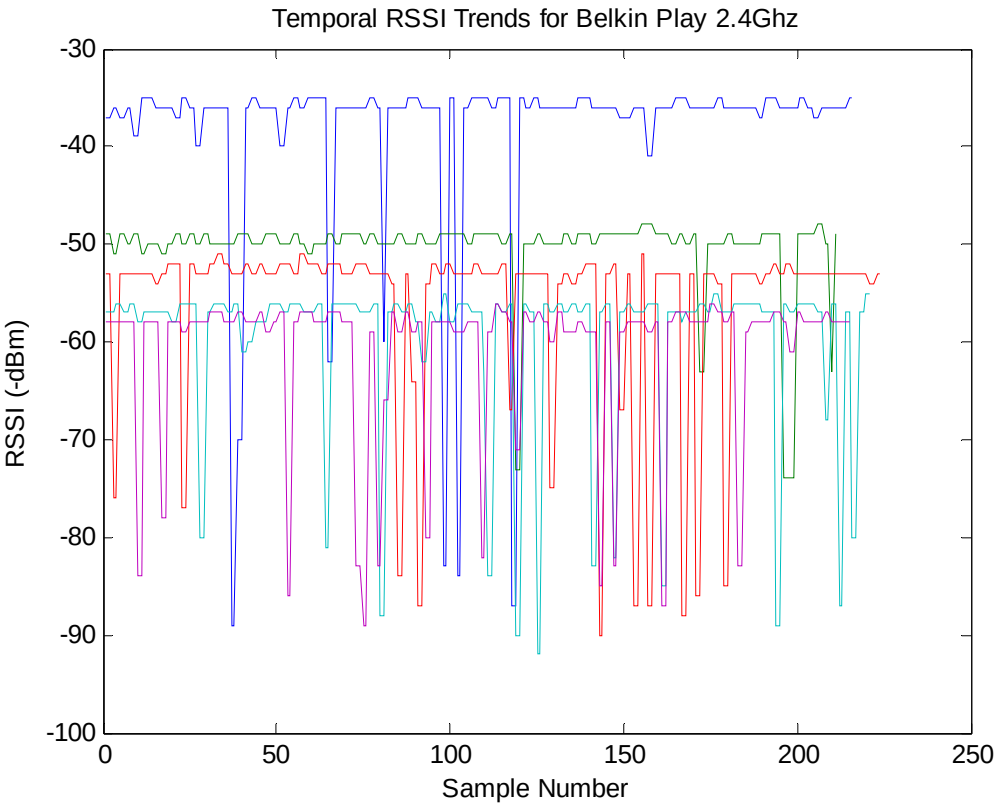
As soon as I got home, I set off to improve the figures and post a new poster online. An e-mail was sent out to Binghao and Thomas to have a final check of the poster before I submit it to Chloe.

- Tuesday 8th February 2011

In the early afternoon, I had a reply from Thomas, but not Binghao. I gave Binghao a call at his office, but Peter informed me that he wasn't there. Fortunately, by mid-afternoon, I had received the OK from both Binghao and Thomas to submit the poster for printing. I'm glad that's over with – however, when I e-mailed Chloe, she had an out of office reply that told me to forward urgent matters to Meredith. I did send the same e-mail to Meredith, who also had an out of office reply to forward to somebody else. I had resolved to leave it at that and stop chasing people around. Chloe would be back by tomorrow if her out of office message is to be believed.

First thing's first. Exporting the summary tables to Excel. Painless – there's now an excel file on my webpage with the data summary.

Now, time to change things up for the temporal variation tests. I'll probably plot 1m, 5m, 10m, 15m, 30m all on one graph for each card and see what happens. First, to modify my .m file. Blue is 1m, Green is 5m, Red is 10m, Teal is 15m, Purple is 30m. And now, the plots:


Temporal RSSI Trends for Belkin Play 2.4Ghz
RSSI (-dBm)
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-40
-50
-60
-70
-80
-90
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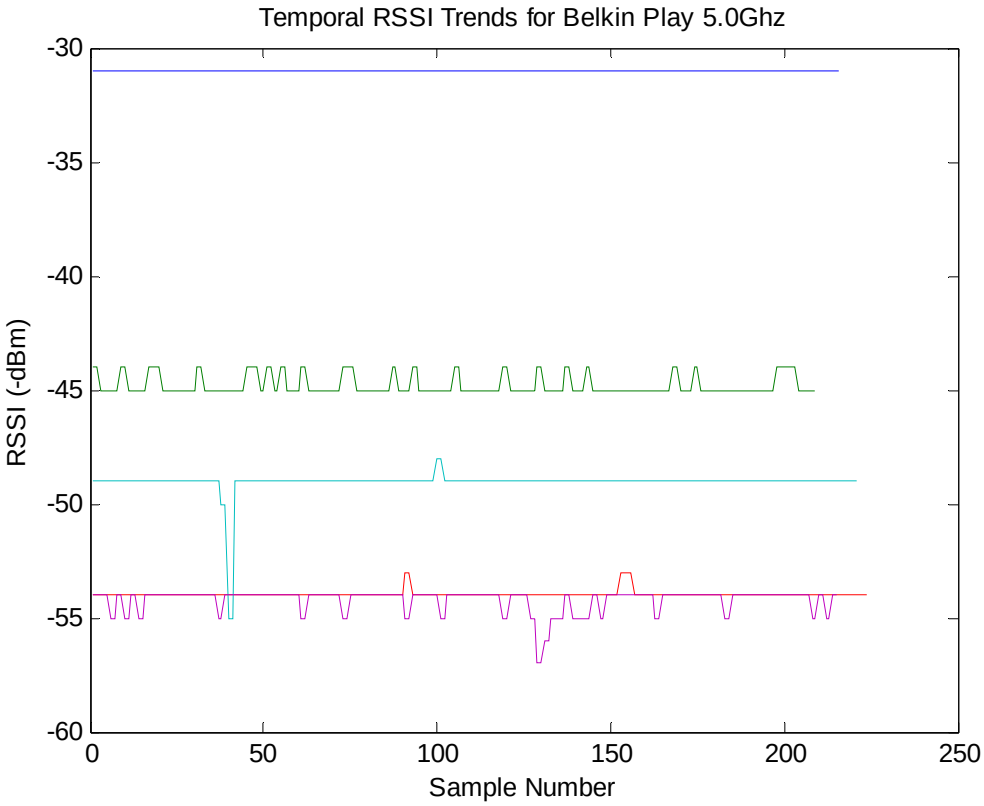
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Belkin Play 5.0Ghz
RSSI (-dBm)
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-45
-50
-55
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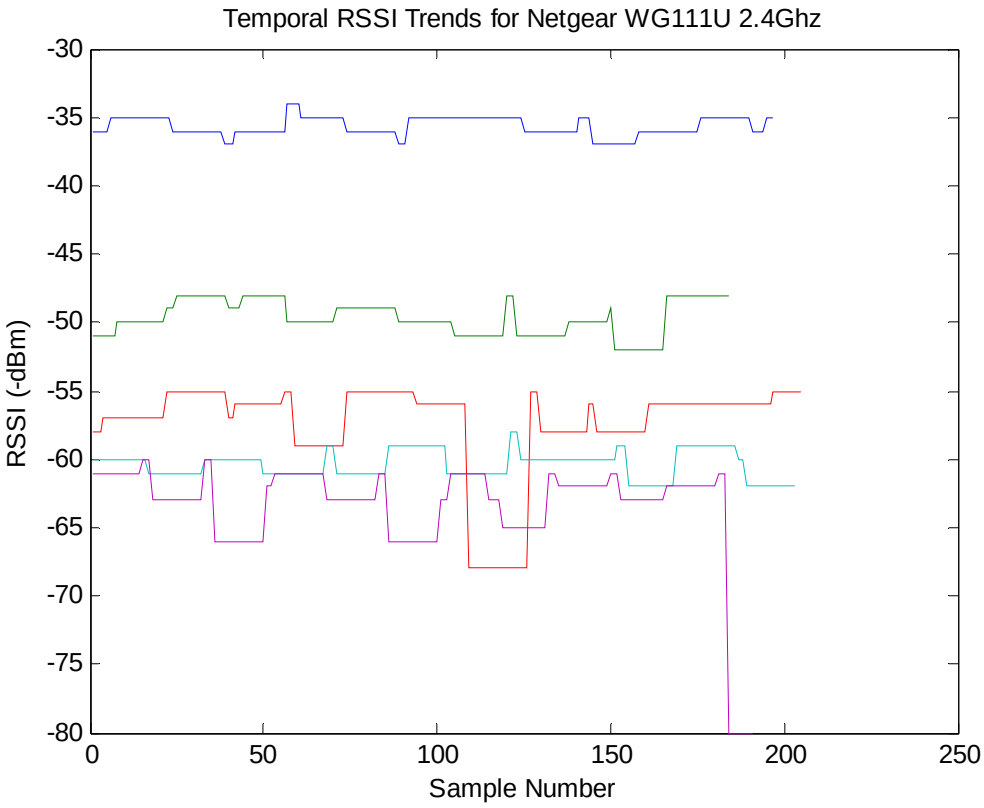
100
150
200
250
Sample Number


Temporal RSSI Trends for Netgear WG111U 2.4Ghz
RSSI (-dBm)
-30
-35
-40
-45
-50
-55
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-70
-75
-80
0
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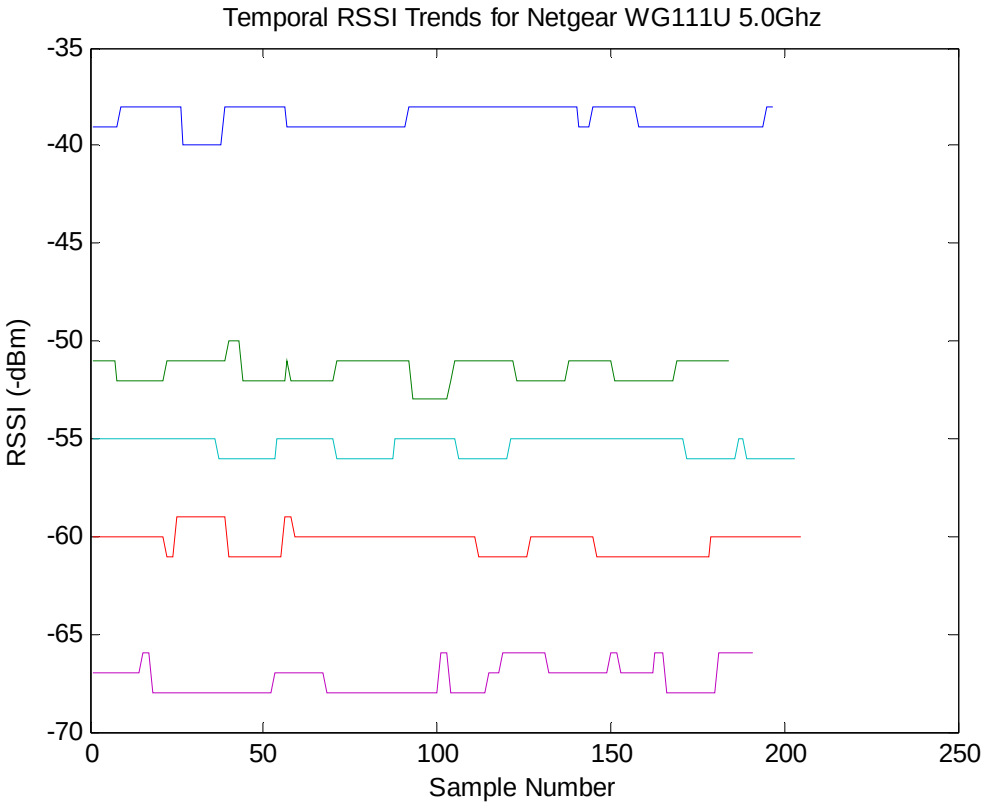
100
150
200
250
Sample Number


Temporal RSSI Trends for Netgear WG111U 5.0Ghz
RSSI (-dBm)
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-45
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-55
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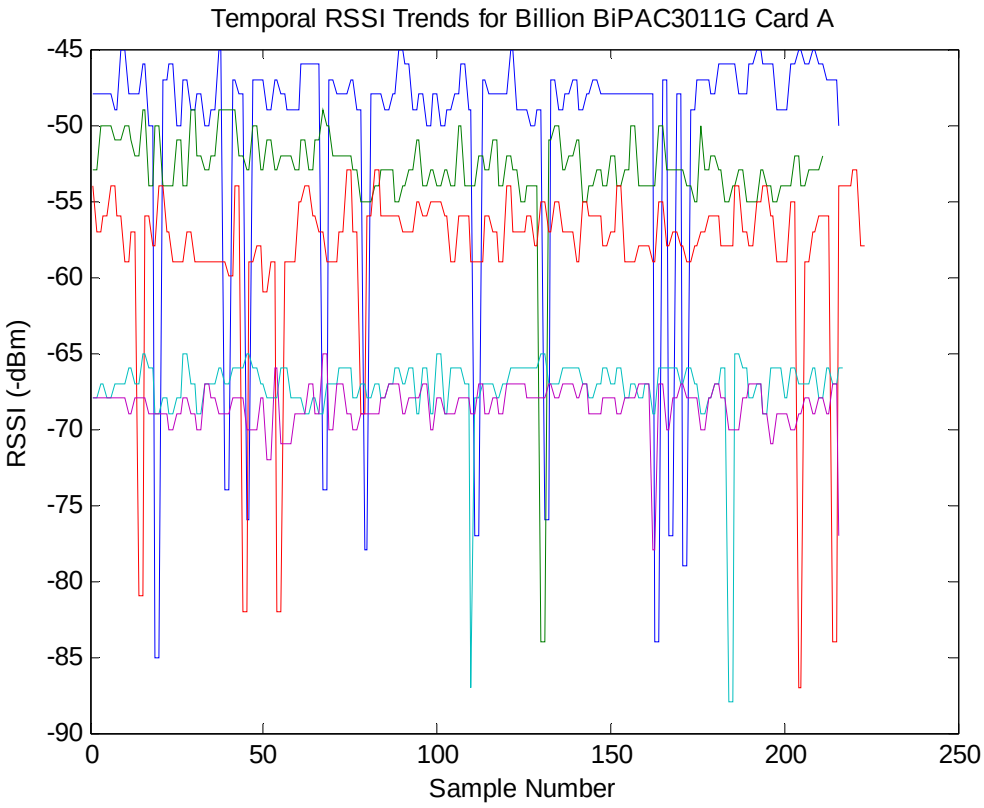
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Billion BiPAC3011G Card A
RSSI (-dBm)
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-50
-55
-60
-65
-70
-75
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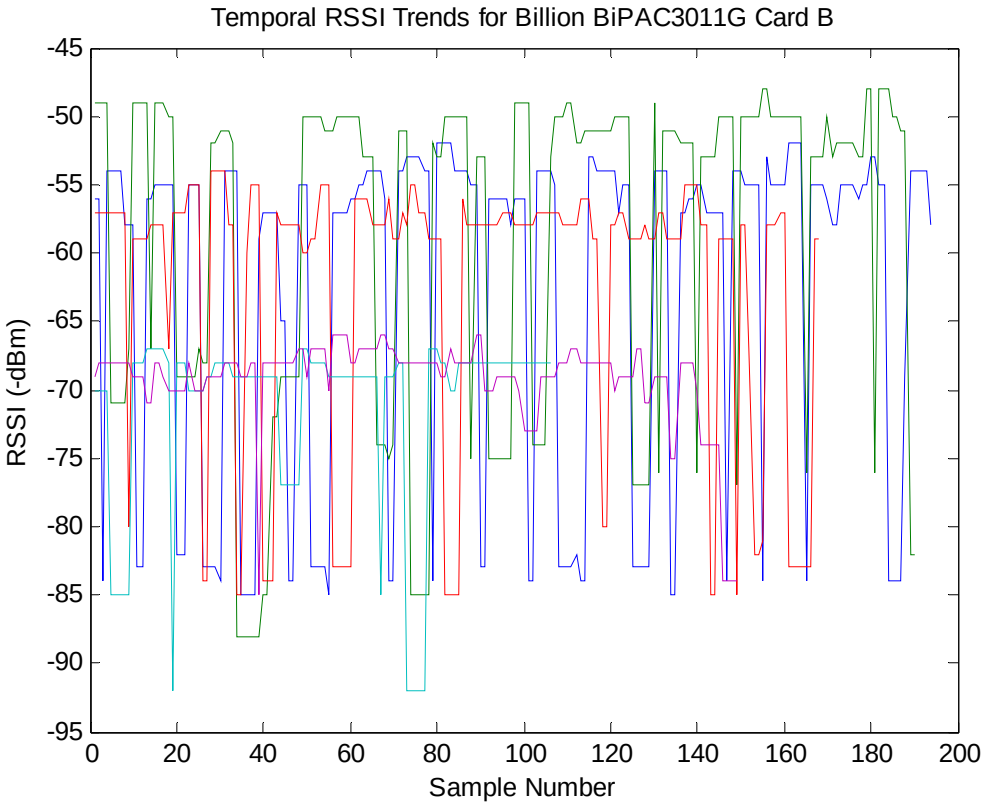
-85
-90
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Billion BiPAC3011G Card B
RSSI (-dBm)
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-50
-55
-60
-65
-70
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-90
-95
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60
80
100
120
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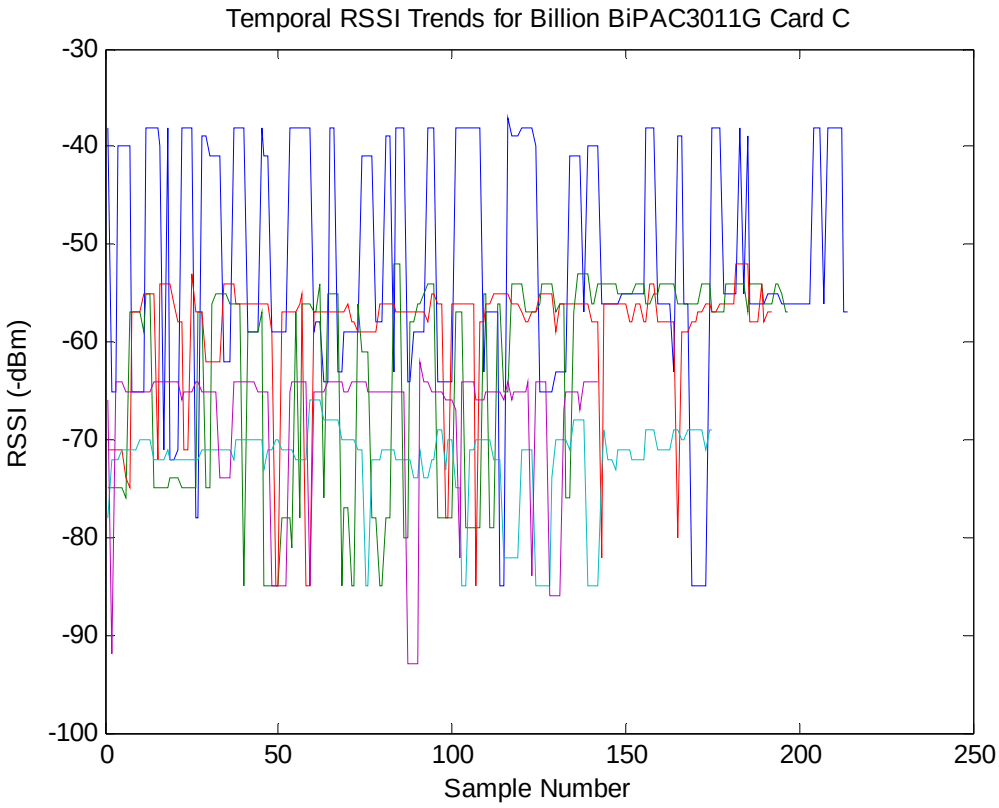
Temporal RSSI Trends for Billion BiPAC3011G Card C
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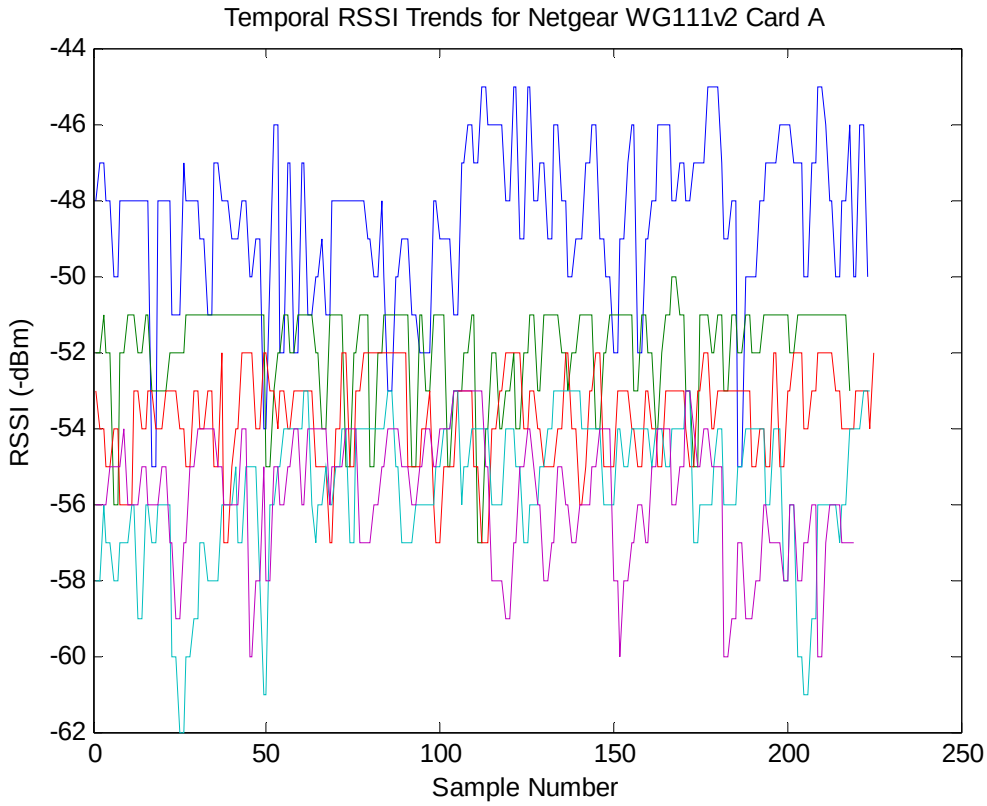
Sample Number


Temporal RSSI Trends for Netgear WG111v2 Card A
RSSI (-dBm)
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-48
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-52
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-60
-62
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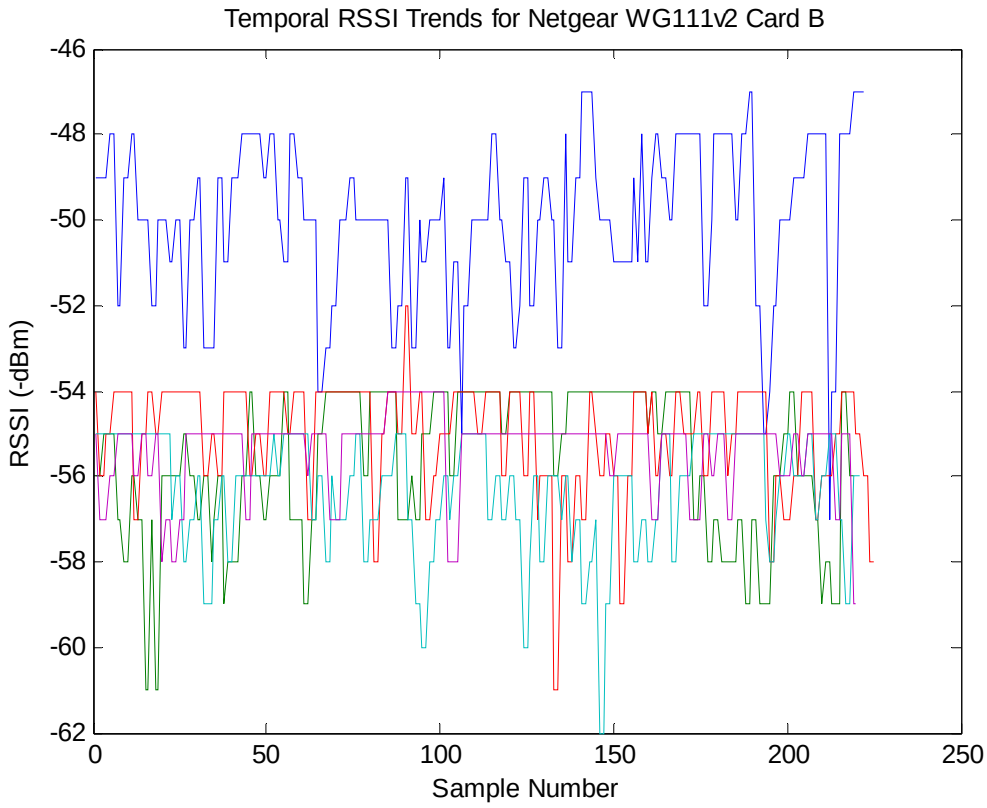
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Netgear WG111v2 Card B
RSSI (-dBm)
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-48
-50
-52
-54
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-62
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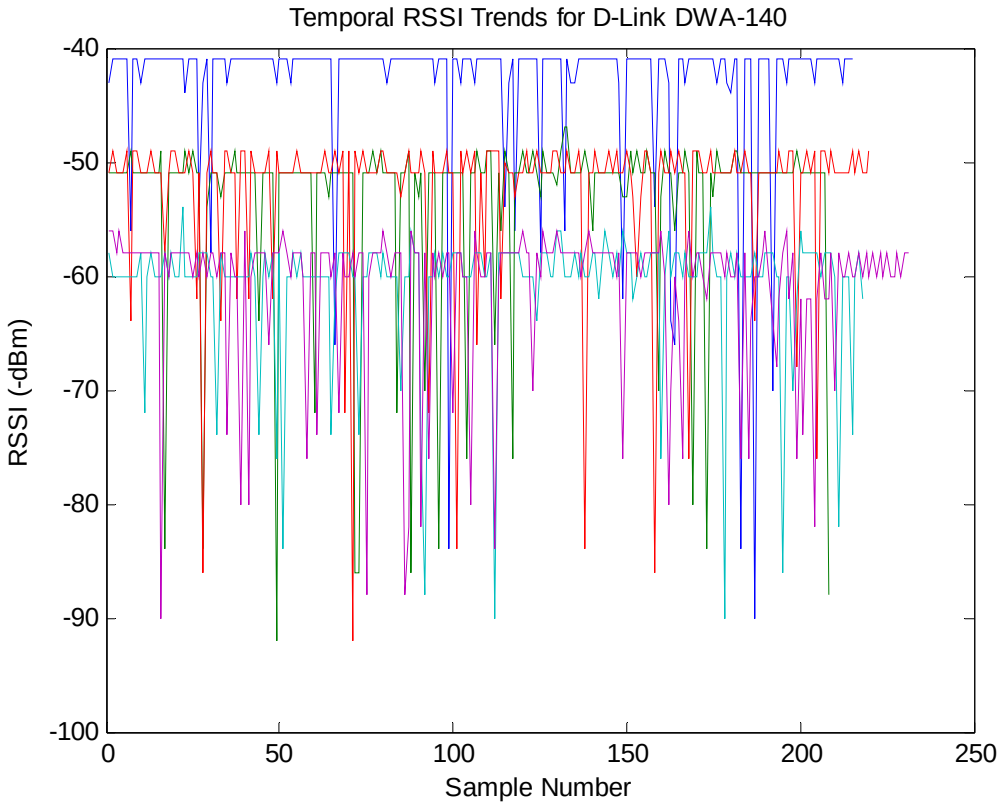
50
100
150
200
250
Sample Number


Temporal RSSI Trends for D-Link DWA-140
RSSI (-dBm)
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-50
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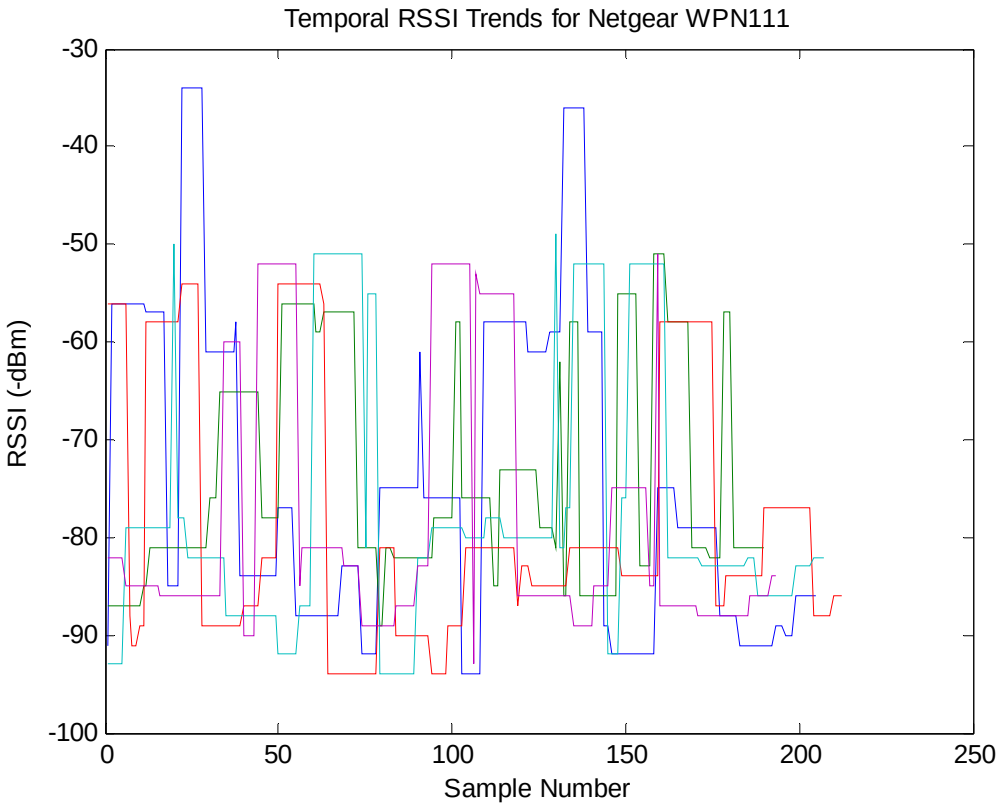
100
150
200
250
Sample Number


Temporal RSSI Trends for Netgear WPN111
RSSI (-dBm)
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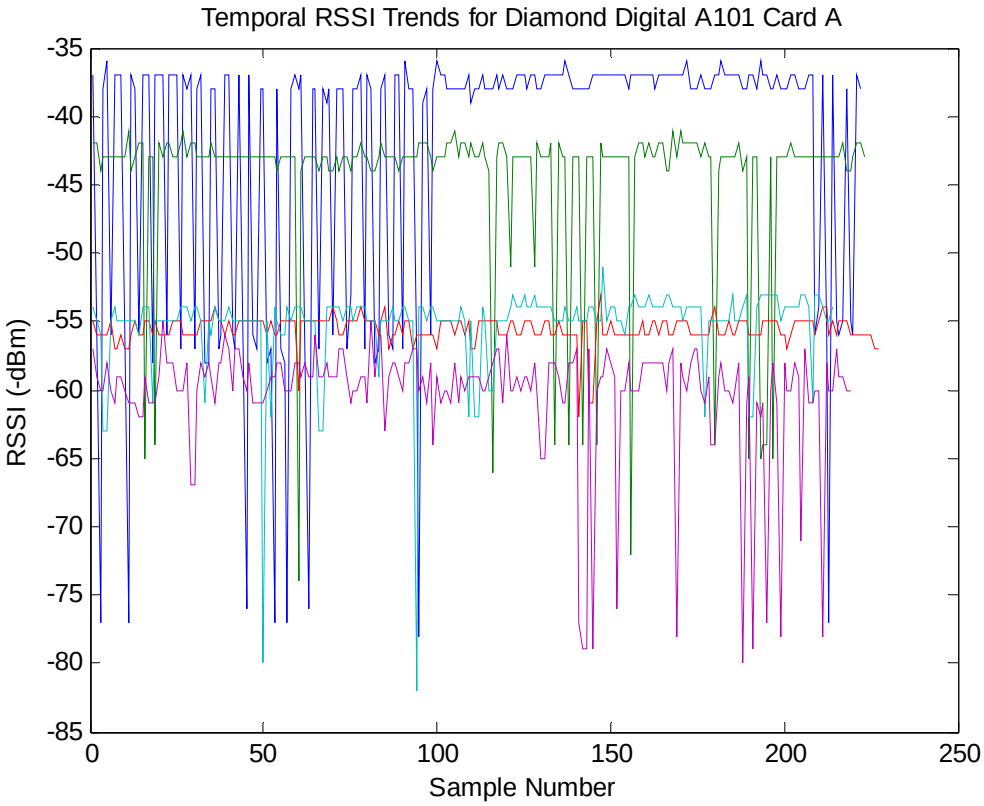
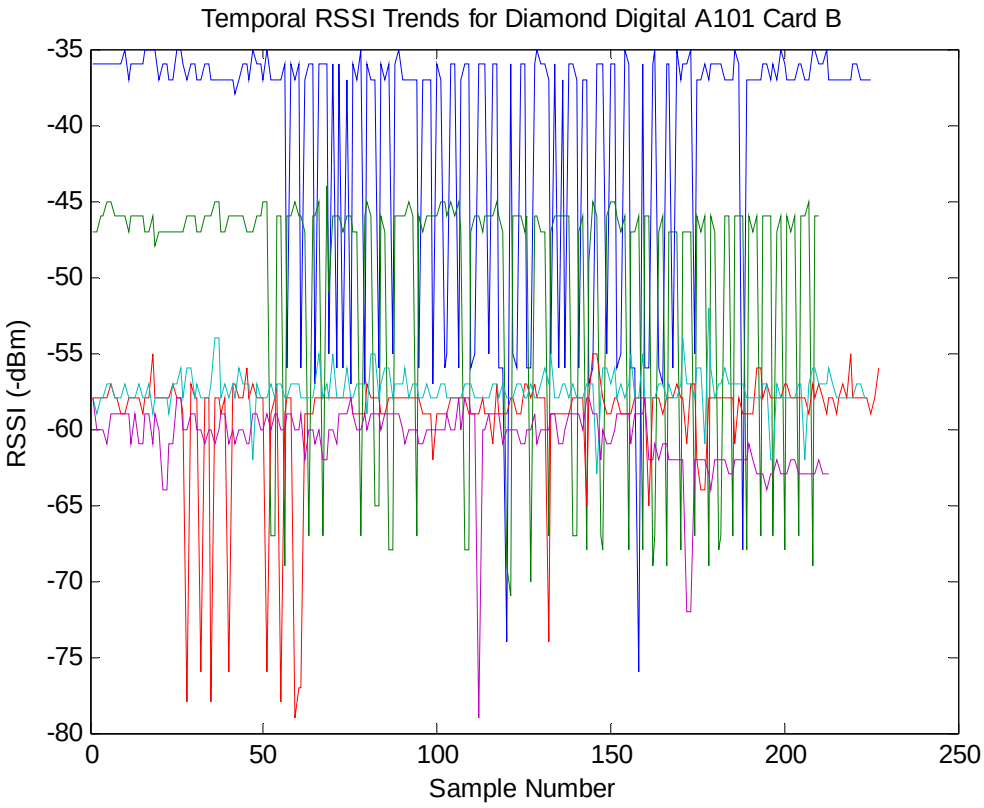
-50
-60
-70
-80
-90
-100
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Diamond Digital A101 Card A
RSSI (-dBm)
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Diamond Digital A101 Card B
RSSI (-dBm)
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-40
-45
-50
-55
-60
-65
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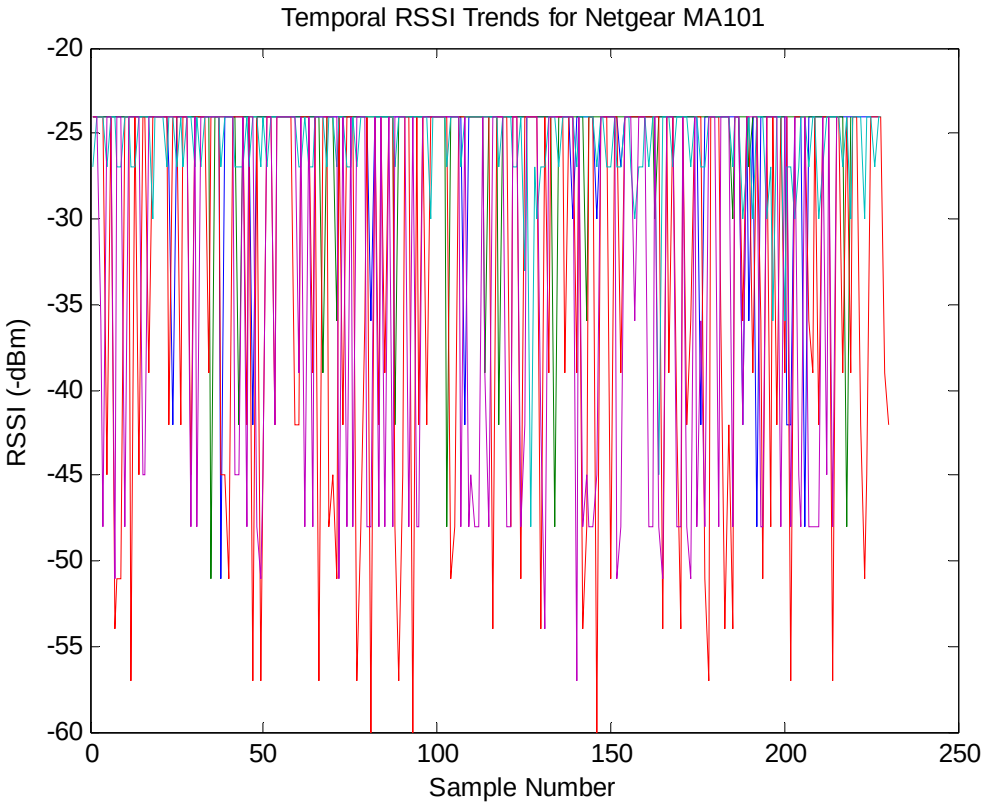
-75
-80
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Netgear MA101
RSSI (-dBm)
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-30
-35
-40
-45
-50
-55
-60
0
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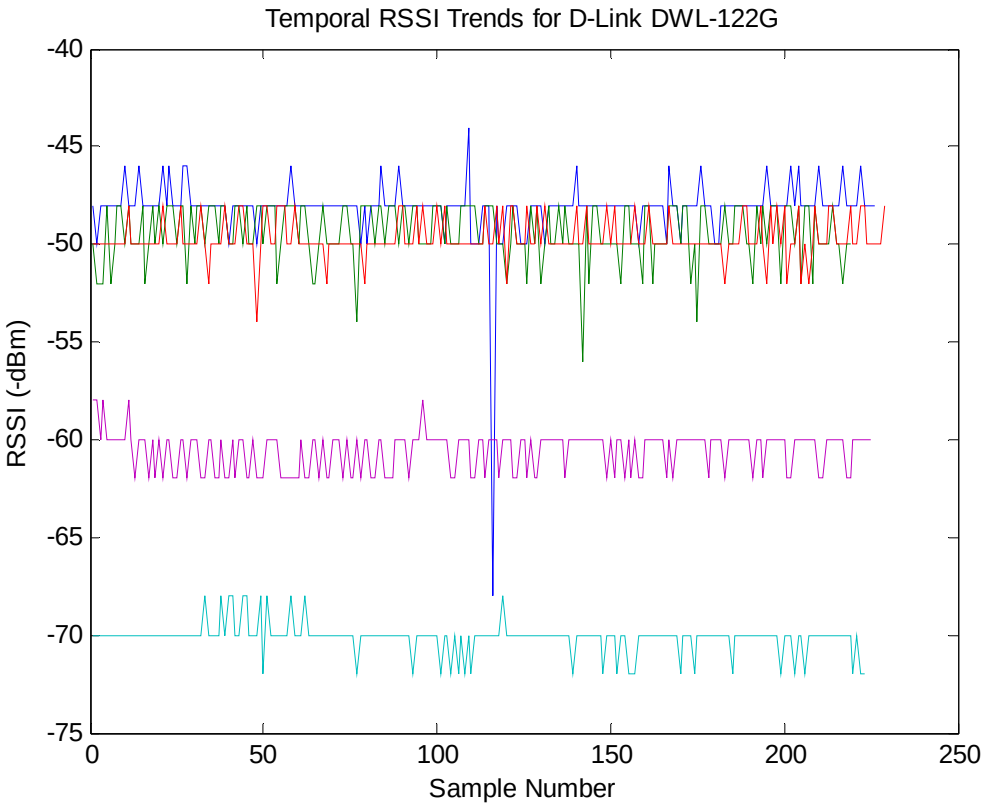
100
150
200
250
Sample Number


Temporal RSSI Trends for D-Link DWL-122G
RSSI (-dBm)
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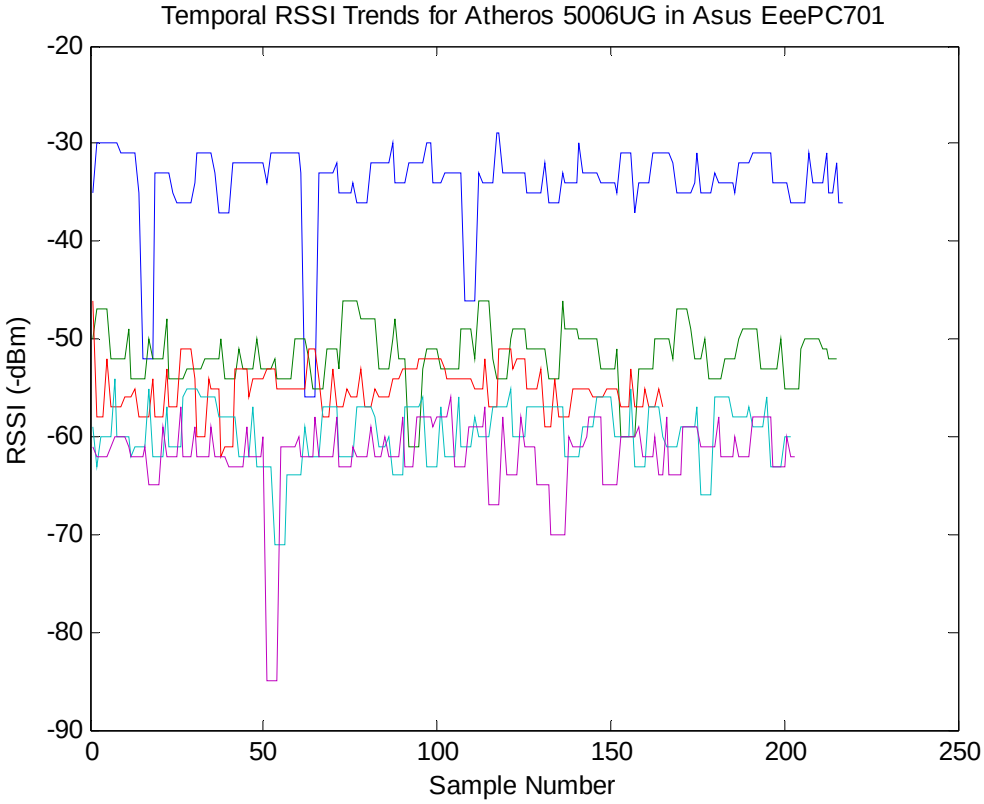
-45
-50
-55
-60
-65
-70
-75
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Atheros 5006UG in Asus EeePC701
RSSI (-dBm)
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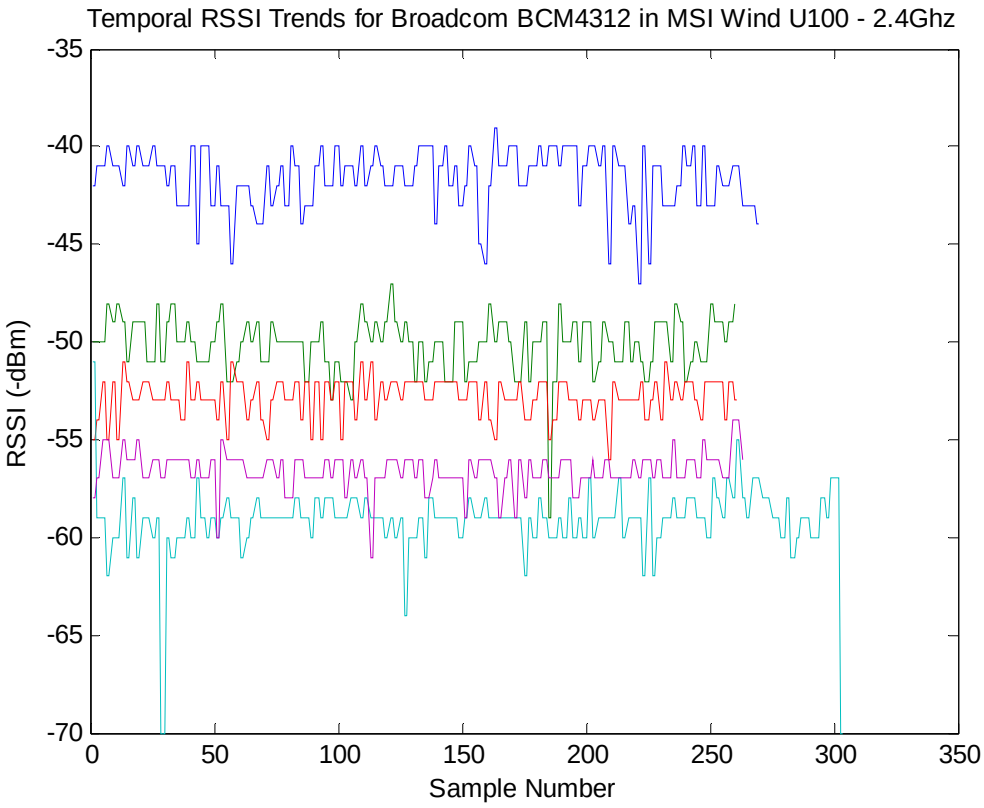
-30
-40
-50
-60
-70
-80
-90
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Broadcom BCM4312 in MSI Wind U100 - 2.4Ghz
RSSI (-dBm)
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-50
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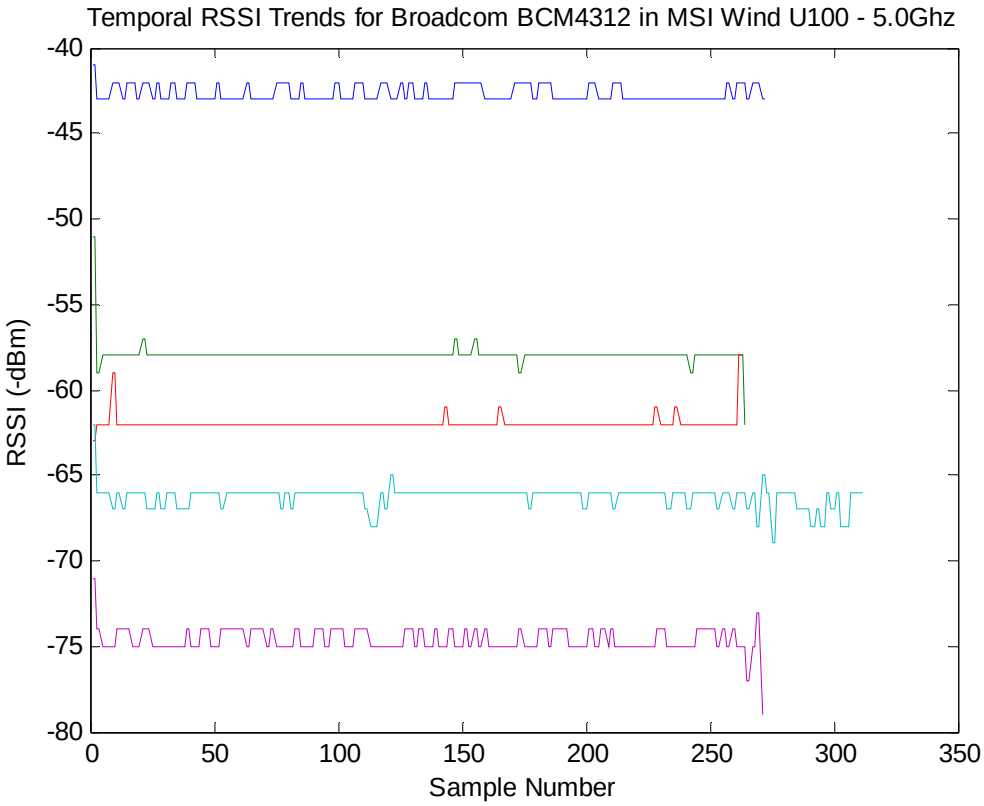
50
100
150
200
250
300
350
Sample Number


Temporal RSSI Trends for Broadcom BCM4312 in MSI Wind U100 - 5.0Ghz
RSSI (-dBm)
-40
-45
-50
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0
50
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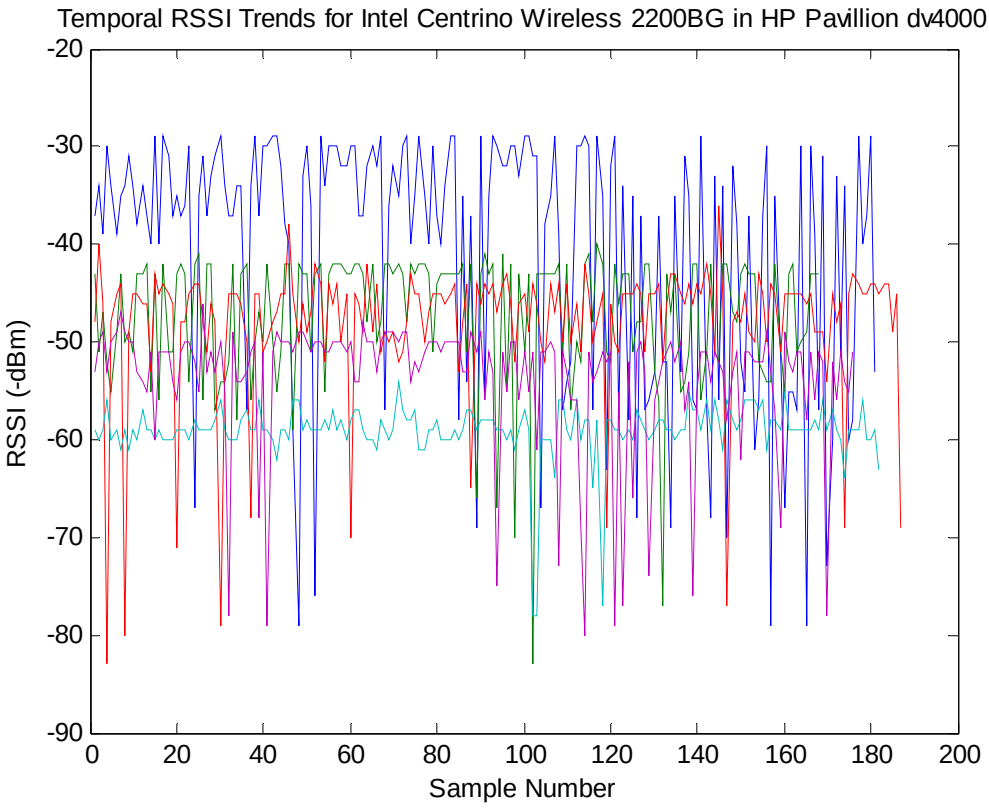
150
200
250
300
350
Sample Number


Temporal RSSI Trends for Intel Centrino Wireless 2200BG in HP Pavillion dv4000
RSSI (-dBm)
-20
-30
-40
-50
-60
-70
-80
-90
0
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40
60
80
100
120
140
160
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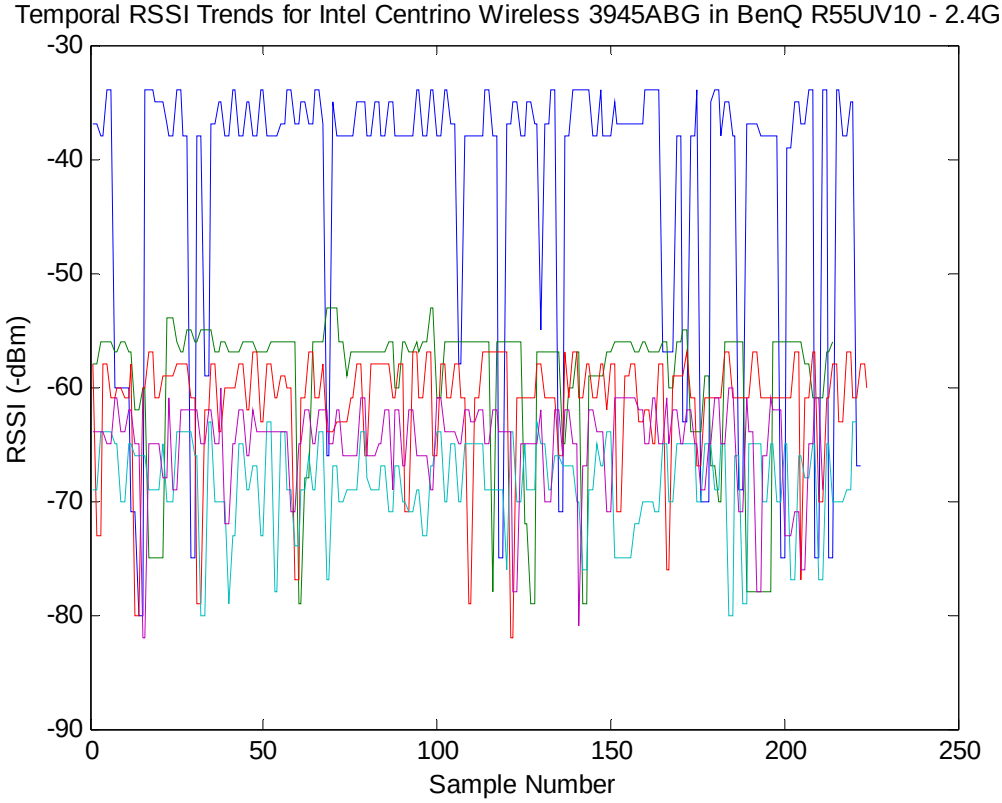
200
Sample Number


Temporal RSSI Trends for Intel Centrino Wireless 3945ABG in BenQ R55UV10 - 2.4Ghz
RSSI (-dBm)
-30
-40
-50
-60
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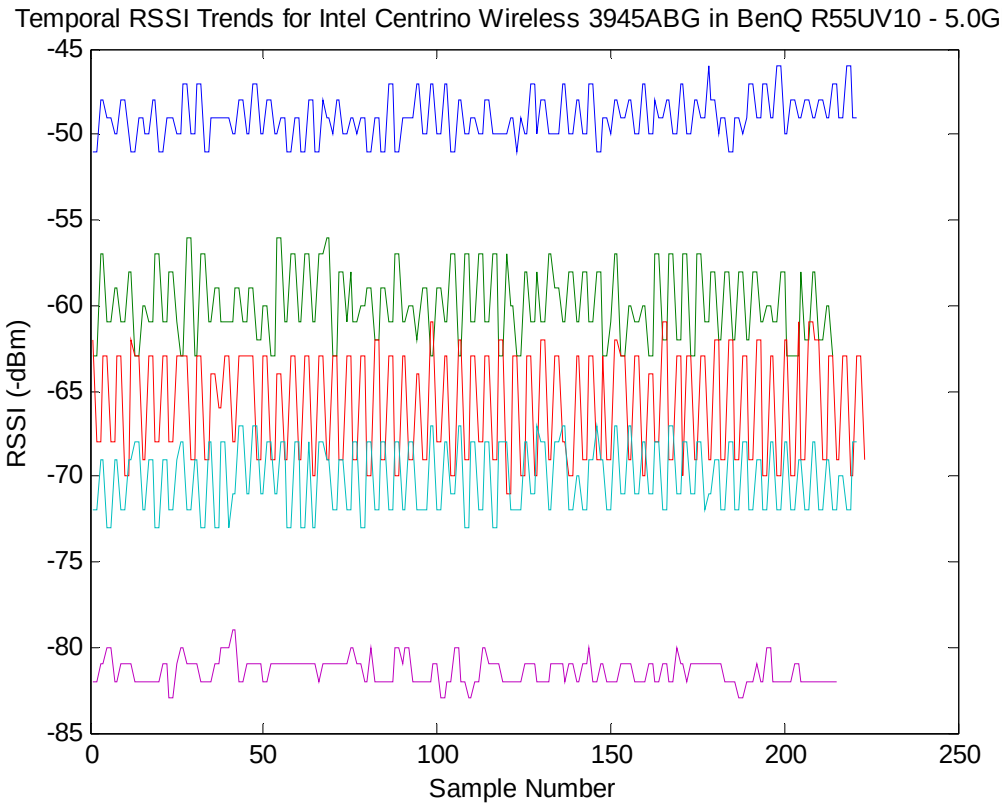
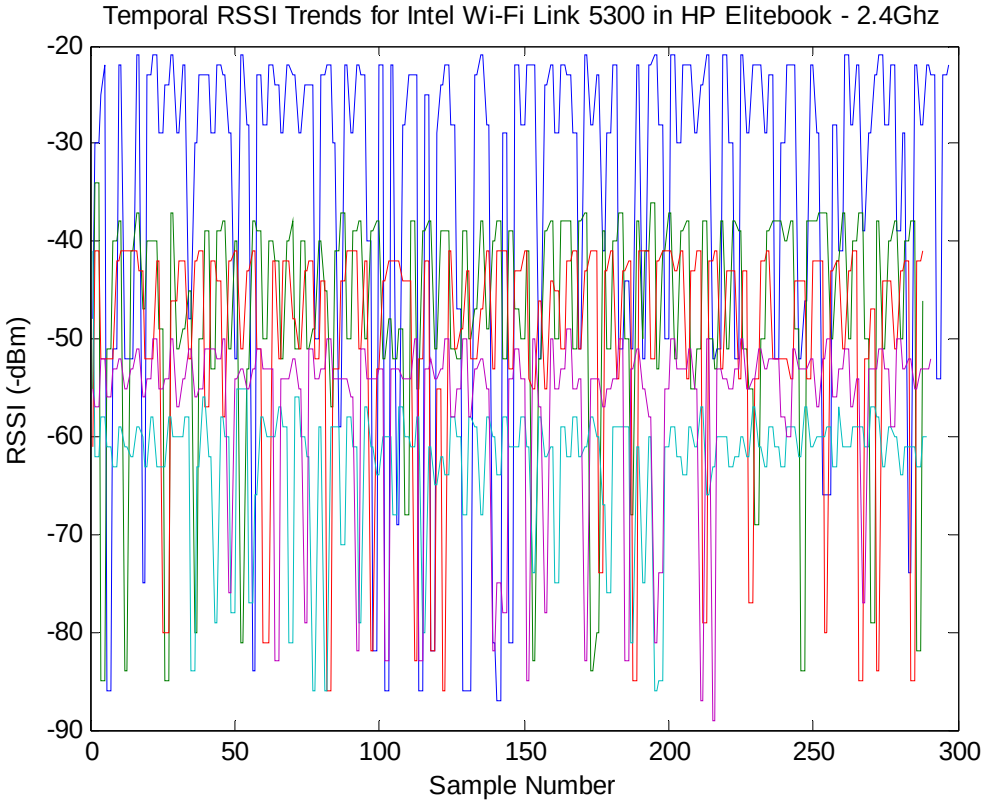
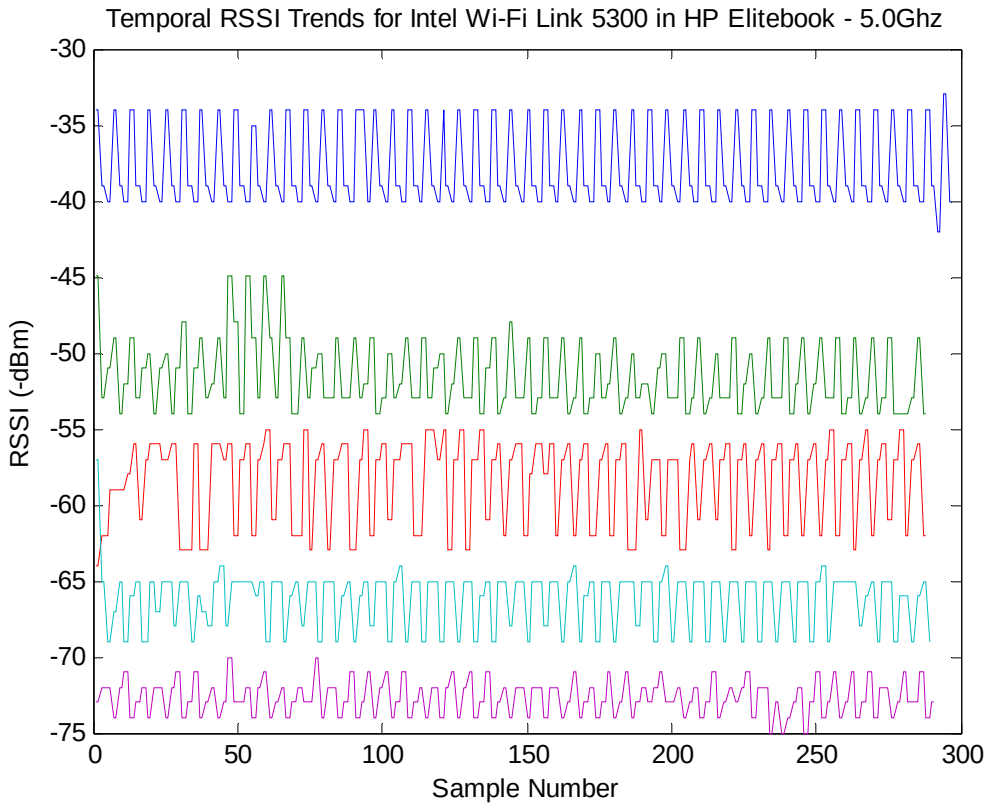
-80
-90
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Intel Centrino Wireless 3945ABG in BenQ R55UV10 - 5.0Ghz
RSSI (-dBm)
-45
-50
-55
-60
-65
-70
-75
-80
-85
0
50
100
150
200
250
Sample Number


Temporal RSSI Trends for Intel Wi-Fi Link 5300 in HP Elitebook - 2.4Ghz
RSSI (-dBm)
-20
-30
-40
-50
-60
-70
-80
-90
0
50
100
150
200
250
300
Sample Number


Temporal RSSI Trends for Intel Wi-Fi Link 5300 in HP Elitebook - 5.0Ghz
RSSI (-dBm)
-30
-35
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-50
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-75
0
50
100
150
200
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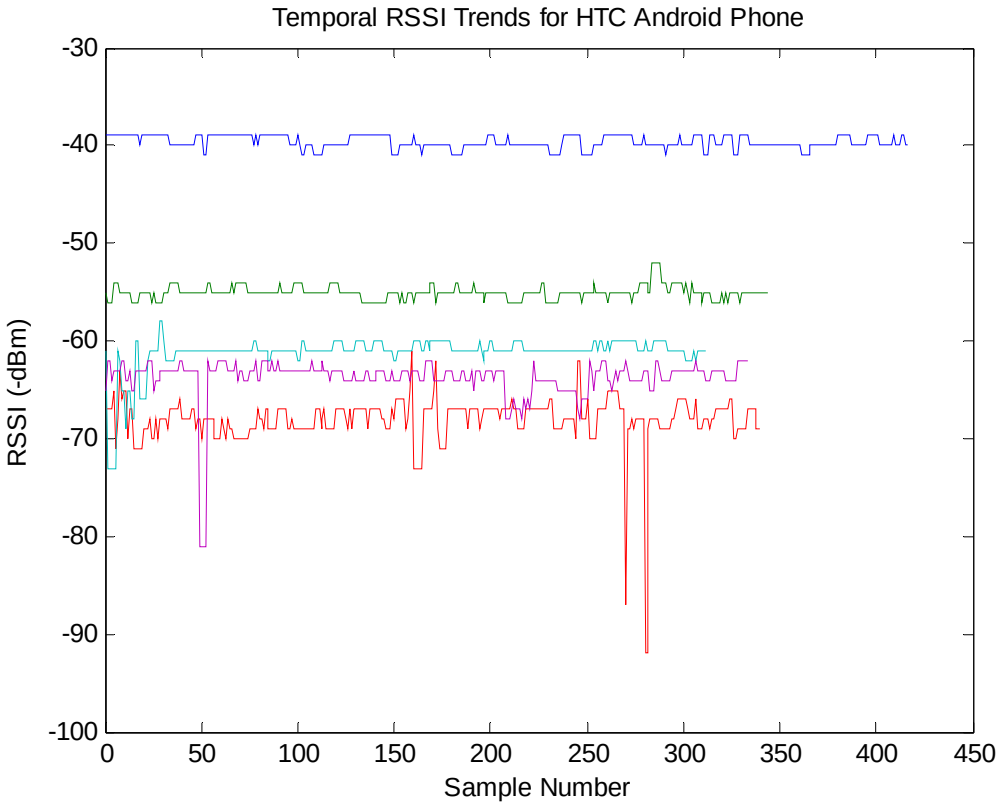
300
Sample Number


Temporal RSSI Trends for HTC Android Phone
RSSI (-dBm)
-30
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150
200
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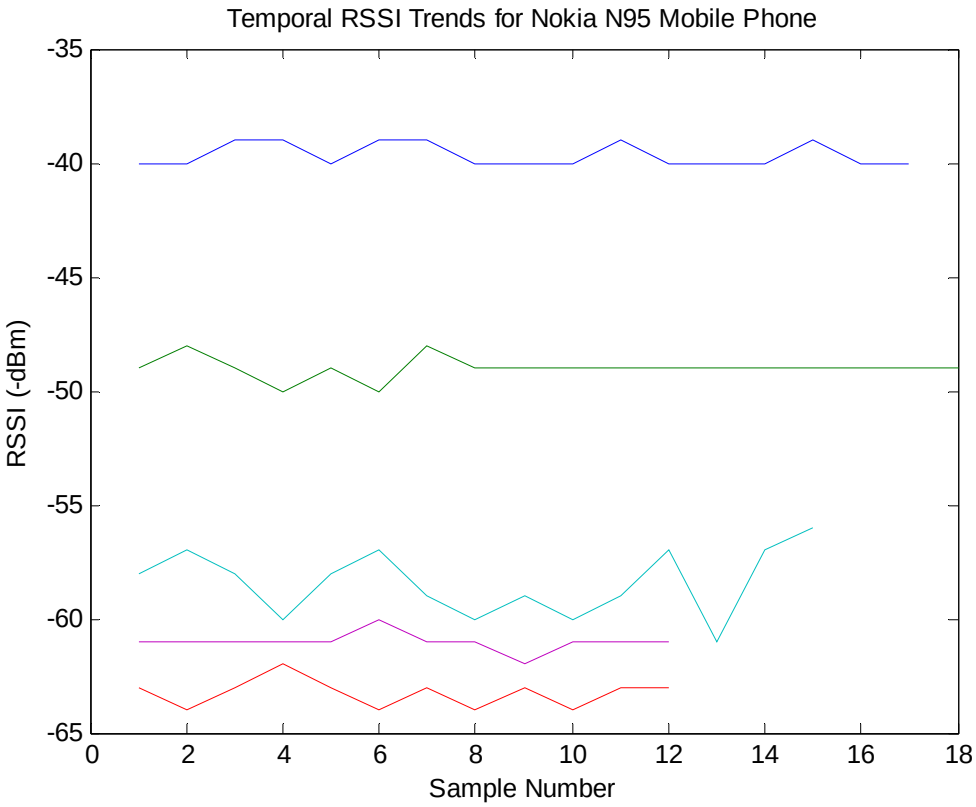
400
450
Sample Number



Take-home messages: some cards have systematic issues with the way they report signal levels – averaging is a very good idea to get rid of the bouncyness of the signal. Furthermore, some cards have very noisy dropout behaviour – also reinforces the need for filtering the data to remove the spikes. Some cards don't have precision to the dB level – one of the D-Link cards are like that. Some cards cache – pays to be hardware aware.

- Wednesday 9th February 2011

I gave Chloe a ring today just to make sure that the poster is okay. She said that she had received the file, but it won't be printed until they receive all of the files. She said that if there were problems, she would let me know.

Created a template for the final report with some rough headings. Finding it hard to write even one sentence – starting it is very difficult, as is arranging everything into a logical structure. Binghao told me to put everything in – this is going to be very difficult. I started drafting part of the method before giving up in frustration … it's not much better than running the experiments.

- Thursday 10th February 2011

Trying to be logical, I continued writing the final report, finishing the method off, adding a few figures in and beginning the results by trying to summarize some of the logical points that can be observed from the data. I cleaned up the tables by removing the Mode column as we are probably not interested in the mode for the final report. There is still a lot to be written.

- Friday 11th February 2011

Today, I tried to round off the results and discussions. As of now, I still have not completed the abstract, introduction and conclusion. I did add some more figures into the document for the temporal trends, however, all figures and tables are unlabelled and all of the text is unreferenced. I'm not quite sure which method for citation is the best, and likewise, it's hard to find some information to cite when some of the ideas are a bit difficult and have not been widely discussed. Just today, Microsoft Word decided to corrupt

my document, however, I managed to repair it with a bit of work. Just another unexpected bump in the road, which research seems to be all about.