New Zealand – North Island Sample Report - 2015

Introduction

Mobile phone and broadband services continue to be the major growth area of the New Zealand telecommunications market. Mobile use of the internet for business and personal use is a major influence in this growth.

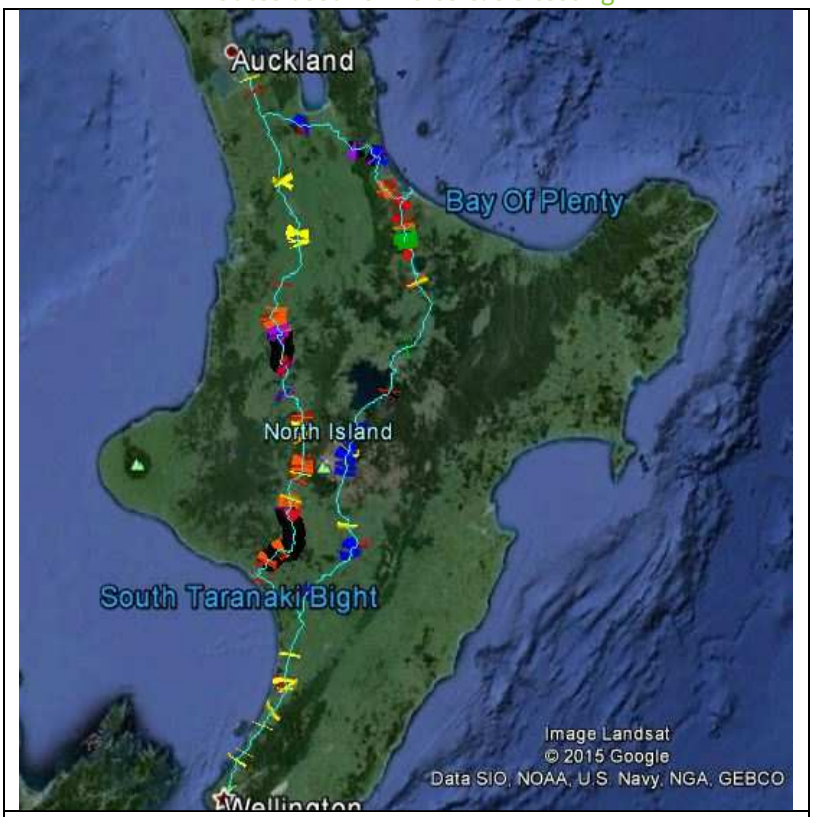
In 2013 in New Zealand there were 4.766 million mobile services (voice and data) or 105.6 per 100 inhabitants.[1] New Zealand's census usual resident population count at 5 March 2013 was 4,242,048 – an increase of 214,101 people (5.3 percent) since the 2006 Census[2].

This is significant for all areas of New Zealand as the rapid growth is forecast to continue creating a digital divide for those areas where mobile connectivity is reduced or compromised compared with the capital cities.

Tested Routes

The sample testing routes driven for the New Zealand North Island included approximately 1,173klms of testing capturing Voice and 3G results. The Map below illustrates the actual Voice and 3G testing routes.

Routes used for Voice & 3G testing



Voice & 3G Testing approx. 1,173klms

Sources: Google Earth 2015 & DEG overlay

1http://www.itu.int/en/Pages/default.aspx
2http://www.stats.govt.nz/

Voice and 3G Blackspots

Blackspots are locations or sections of road where no signal can be found, resulting in failure to connect to the network. The identification of a blackspot (Map above) begins with the signal strength markers collected across the region.

The Voice & 3G signal strength testing for the sample of New Zealand North Island covered approx. 1,173klms and generated approx. 23,460 markers for each of the three carriers (with signal strength taken every 50m). The resultant 70,380 markers provide an evidence base showing the real extent of network coverage for mobile phones, in the locations tested.

3G & Voice distance and total number of tests for all 3 Carriers.

Local Government	Per Carrier	All Three Carriers
New Zealand North Island	23,460	70,380

This data has then been filtered and mapped to highlight coverage blackspots. The report contains detailed maps showing the roads tested and the extent of blackspots in the area. The colour code is as follows:

- Black – no signal for Spark, 2 Degrees and Vodafone
- Orange - 2 Degrees and Vodafone have no signal – Spark is generating a signal
- Yellow – No 2 Degrees signal – Spark and Vodafone have signal
- Red - No Vodafone signal – Spark and 2 Degrees have signal
- Blue – No Spark signal – 2 Degrees and Vodafone have signal
- Green – Spark and 2 Degrees have no signal – Vodafone has signal
- Purple – Spark and Vodafone have no signal – 2 Degrees has signal

The Table below highlights the concentration of blackspots on roads away from urban centres. Over 189klms or 16.13% of the roads tested had no coverage for any of the three Carriers. The distance travelled with no 2 Degrees or Vodafone (with Spark only coverage) is 64.82klms or 5.53%. The area where there is two carrier coverage (Spark and 2 Degrees) is 61.44klms or 5.24%. A very small 13.82klms or less than 1.8% identifies areas (in purple) where 2 Degrees had coverage and Spark and Vodafone did not.

The sample testing DEG completed was undertaken with a smart phone with a strong antenna. Users with handheld devices with smaller antennas or seeking to call/connect indoors will experience further degrading of the signals strength.

Summary of Voice and 3G Blackspots

GSM & 3G Signal Strength Coverage Category	klms	percent
White - coverage from all three carriers	719.92	61.37
Black – no signal for Spark, 2 Degrees and Vodafone	189.22	16.13
Orange - 2 Degrees and Vodafone have no signal – Spark has signal	64.82	5.53
Yellow – No 2 Degrees signal – Spark and Vodafone have signal	57.96	4.94
Red - No Vodafone signal – Spark and 2 Degrees have signal	61.44	5.24
Blue – No Spark signal – 2 Degrees and Vodafone have signal	40.42	3.45
Green – Spark and 2 Degrees have no signal – Vodafone has signal	25.40	2.17
Purple – Spark and Vodafone have no signal – 2 Degrees has signal	13.82	1.18
Total	1173.00	100.00

Network Site Test locations and Time Series Tests

The Network Performance tests are used to evaluate the performance of internet connectivity for the each carrier tested. Over 5 days we tested all three major carriers over 120 times. The Network Performance Tests (NPTs) are completed to validate the Signal Strength results and to challenge the carrier network with download, upload and network response time. This test methodology reflects a real world scenario for a user, downloading a 2Mb item and uploading a 500Kb item. Both tests are aggregated into a score as seen in Table below.

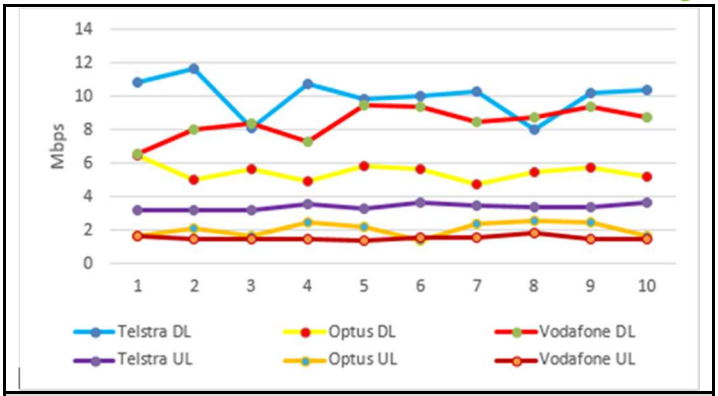
Network Performance Test Scores

Score	Latency/Ping (ms)	Download Speed (in Mbps)	Upload Speed (in Mbps)
0	-	0	0
1	2000+	0.01 – 0.25	0.01-0.249
2	1500-1999	0.26-0.50	0.250-0.500
3	1200-1499	0.51- 0.99	0.500-0.749
4	1000-1199	1.00 -1.99	0.750-0.99
5	800-999	2.00 -2.99	1.00-1.99
6	600-799	3.00 – 3.99	2.00-2.49
7	500-599	4.00 – 4.99	2.50-4.99
8	300-499	5.00 – 9.99	5.00-7.49
9	200-299	10.00 – 19.99	7.50-9.99
10	100-199	20.00 – 49.99	10.00-14.99
11	75-99	50.00-74.99	15.00-19.99
12	50-74	75.00-99.99	20.00-29.99
13	30-49	100-124.99	30.00-39.99
14	20-29	125-149.99	40.00-49.99
15	Less than 20	150 +	50+

Network Performance Time Series Testing

We also tested a small number of locations using the Time Series Test used in the Mobile Coverage Testing program of 10 Network Performance Tests in a series. This serves to validate the individual Network Performance Tests and puts the individual networks and the devices under a spot light. The overlay of all three test results onto the same graph (sample below) clearly illustrates the network performance. The graph below shows the range in performance of the three Australian carriers in the Brisbane CBD. The results for the 5 locations tested in New Zealand are available on request.

Benchmark Location Brisbane CBD – Time Series Testing



Source: DEG GoMobile Network Test 2014

The Time Series Tests combined with the individual Network Performance Tests establishes a robust profile of the carrier performance confirming strengths and highlighting weaknesses.

The *GoMobile Network Test* app can also collect repeated tests over time or motion tests based on set distances.

WiFi can be tested now with additional features available soon.

What is the *GoMobile Network Test* System used for?

Independent Mobile Black Spot Identification
Testing using a proven independent assessment tool provides community organisations with the information they need to seek government and carrier investment. You might now have mobile phone coverage but is your region on the wrong side of the digital divide? Use the independent testing tool - *GoMobile* to inform your advocacy plans.

Mobile Coverage Advocacy
Do you constantly manage business and community complaints over mobile coverage (for calls, internet or broadband)? Are the politicians in your area looking for a tool to empower your regions advocacy with carriers, State Governments and the Commonwealth Department of Communications?

Cloud Connectivity Assessment
Are you advising clients to implement a digital first strategy but they have areas of non-coverage in their customer service area? Use *GoMobile Network Test* to assess current mobile coverage and select the best carrier for your needs.

Remote VPN on Mobile
Do you have customers outside of the DSL network who need to connect to a VPN for remote working? Or do you have a local computer store and need a tool to graphically show your clients the quality of the Mobile networks in a particular location? *GoMobile* is for you.

Planning Assessment - New Mobile Sites
Does your organisation assess new mobile carrier sites and want to evaluate the need for a new tower? Arrange for Digital Economy Group to test the proposed coverage area and prepare an independent report demonstrating the extent of existing coverage or black spots in your area.

Improve E-Health Delivery
Do you have patients that could have an e-health service delivered if they had reliable mobile internet coverage? Arrange for a test and report or complete the testing yourself.

Agricultural system efficiency
Do you have expensive farm machinery that cannot upload performance data due to a lack of mobile connectivity? Farm productivity is now requiring GPS mobile and satellite connectivity to connect your sensors, control your autonomous vehicles and other Machine to Machine technology. By testing independently, using the *GoMobile* system, you can identify where the gaps are and plan infrastructure deployments with carriers or neighbouring farms.

WiFi Testing
Do you manage a WiFi network and want to be able to independently assess the user experience?

GoMobile WiFi users capture signal strength and network performance on a GPS enabled device then review the performance through the portal.
- Use repeated tests to ensure your provider is meeting or exceeding contract requirements
- Looking to evaluate the performance of a new Access point or other hardware?
- Test alternative open WiFi networks to benchmark available internet access in that location

Smart City applications
Are you managing the deployment of sensors across your region? If you are planning on using 3G and 4G enabled monitoring stations and responders, it will pay to use the *GoMobile Network Testing* system to evaluate the options for the most cost effective connectivity plan.

Would you like to have a 2 week trial of *GoMobile*?

Follow these three easy steps:

1. Go to Google Play Store
2. Search for GoMobile Network Test and download onto your Android phone
3. Once installed, you can register for free and begin using immediately for 2 weeks

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