



# How to test your Cell Coverage

iPhone Version

by **VentusRF**<sup>TM</sup>

# Anyone can learn how to test their home or office cell coverage with a few simple steps.

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In this PDF we'll teach you:

- how to test your cell coverage
- how to determine how well your cell service is working at the location tested
- if anything can or needs to be done about your cell service

As well as letting you know about a way to fix problematic service too.

## Before getting started you'll need to:

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Know:

- Your cellphone model (for example 11 or 6s)
  
- Your Wireless Carrier (Verizon, AT&T, Sprint, T-Mobile)



Print out the **Cell Coverage Worksheet** (page 8 of this PDF).



# How am I going to test my Cellular Coverage?

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To test your Cell Coverage you be taking specific measurements using **Field Test Mode** on your phone and recording them on your Cellular Coverage Worksheet. Later in this PDF we will teach you what to do with the measurements you've taken.

## How do I get into Field Test Mode on my Apple™ Phone?

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Getting into **Field Test Mode** on your phone is as easy as making a phone call.

Open your phone app and go to the Keypad.

Call: \*3001#12345#\* *(Pro Tip: Save TestMode as a contact and copy/paste it into your dialer.)*

Make sure when you're dialing to include the Stars and Pound Sign (Hashtags) symbols before you hit the dial button.

You should be taken to a screen that looks like the image on the Left side of the next page.

## What Measurements do you need to take to test your Cellular Coverage?

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There are three types of numbers you will be recording at each place you measure. They are:

1. Measured **RSRP** - (pink line) is your signal strength
2. Measured **RSRQ** - (white line) is the quality of your cell service
3. Physical Cell ID (**PCI**) - (orange line)

On your Cell Coverage Worksheet you will be recording these numbers in the columns that match the bolded acronyms above (**RSRP**, **RSRQ**, and **PCI**).

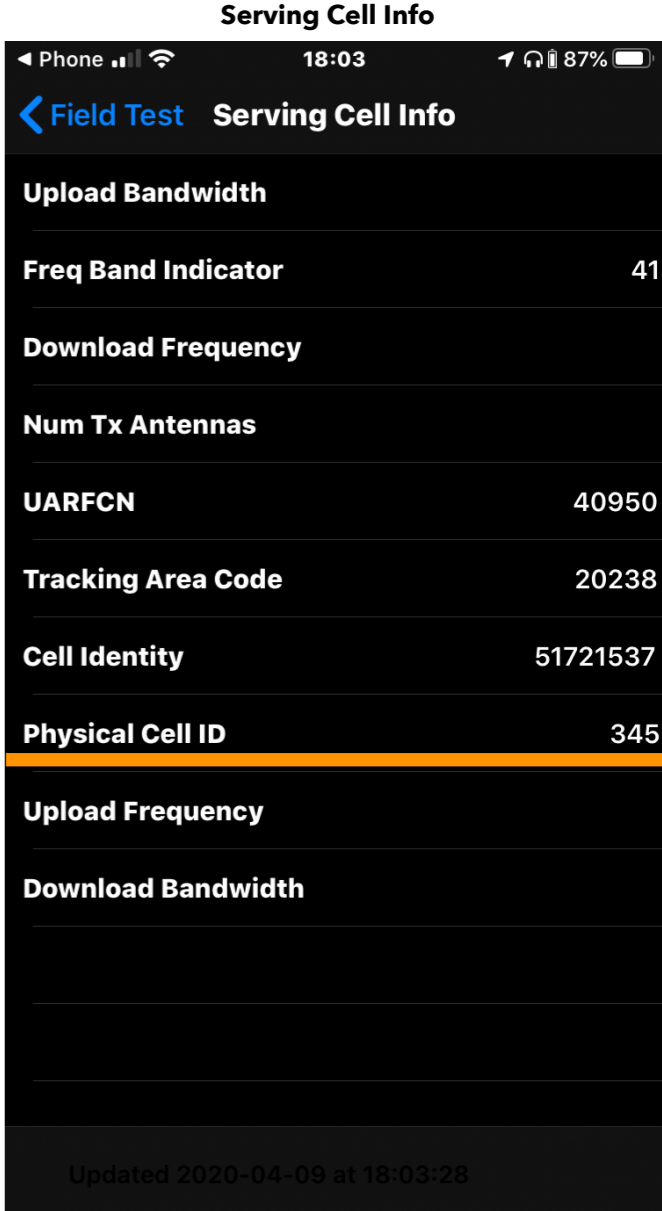
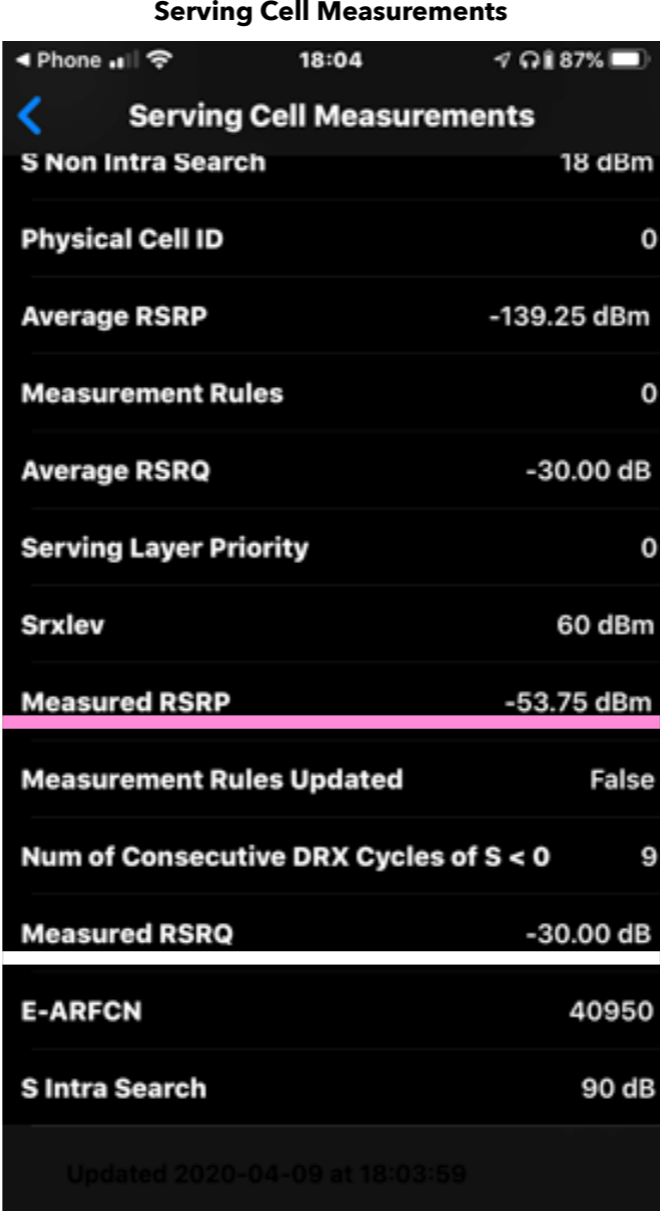
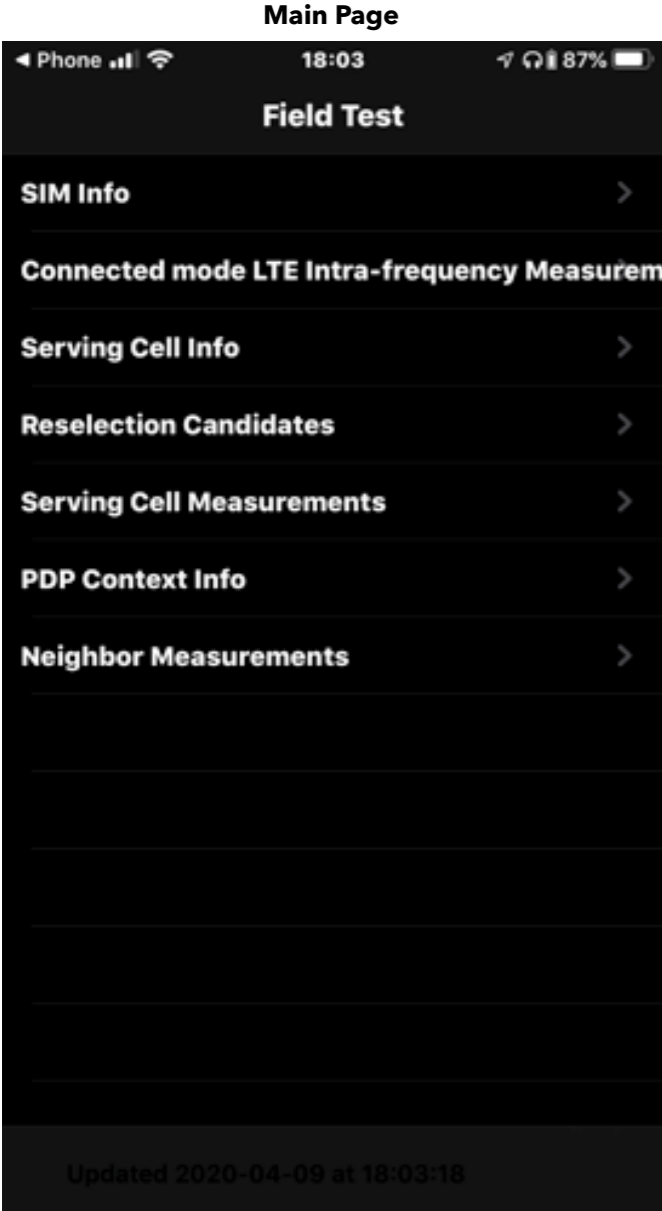
# Finding the Cellular Measurements in Field Test Mode

When you're in **Field Test Mode**, where do you find the three numbers you'll be looking for in each test?

Once you're on the Main Page tap on "Serving Cell Measurements". On the Serving Cell Measurements screen scroll down until you see the Measured **RSRP** and Measured **RSRQ** and record those values on your Cell Coverage Worksheet. *Make sure when recording RSRP and RSRQ numbers to record that they're negative.*

Next, tap the blue back arrow "<" to go back to the main screen.

Now click "Serving Cell Info". On this page you want to record the Physical Cell ID in the **PCI** field of your Coverage Sheet Worksheet.



# How many measurements do you need to take outside?

Recording your outside, cell service coverage is simple. You'll be recording the RSRP, RSRQ, and PCI data in **Field Test Mode** from certain locations onto the **Cell Coverage Worksheet**.

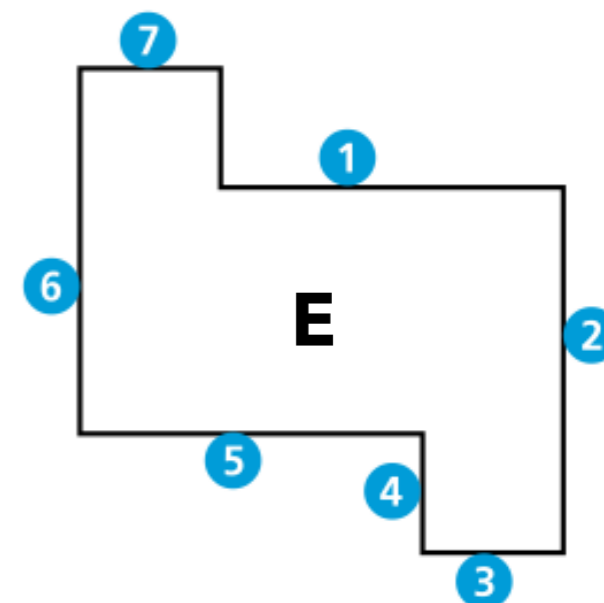
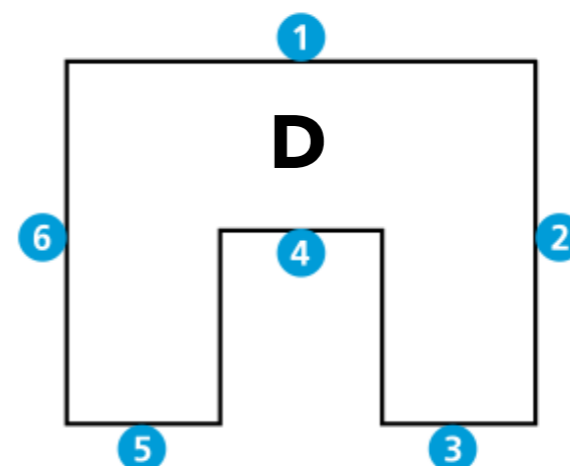
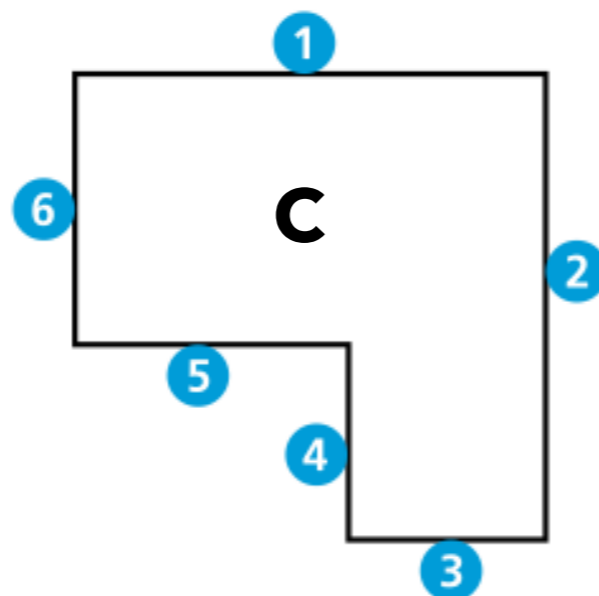
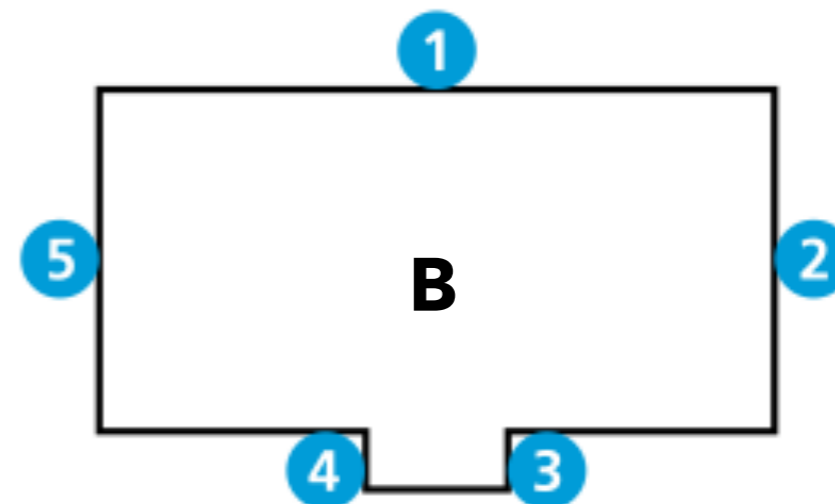
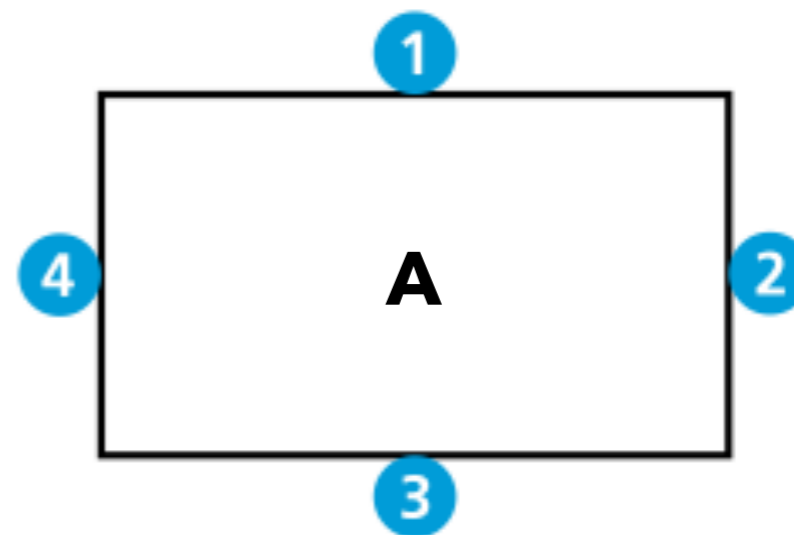
The number of measurements you will be taking is dictated by the shape of your house (see image 1).

Think of, or even draw, the shape of your house.

If your house is flat on each side (nothing sticking out more than two feet). Then your building is like A and you just need to measure 4 times. Once for each side of the building.

Any outcroppings on the side of your house that are deeper than two feet means you need to measure on either side of that outcropping. For example, if your building is like B look at the numbers 4 and 3. You would need to take on measurement on either side of the outcropping.

The house examples C, D, and E show you how you would measure for more complex houses.



# How many measurements do you need to take inside?

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Inside you'll only need 2-3 measurements.

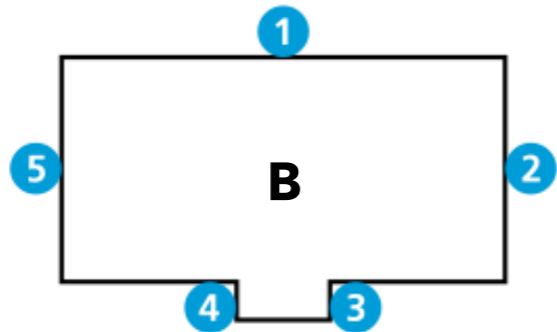
Think of the places you use your phone the most. These areas could be your kitchen, home office, living room, etc. Pick 2-3 of those places and that is where you'll be measuring inside. If this is your offices, pick the lobby, main conference room and one or key other key places.

## How to measure your cell coverage.

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### Outside

- Stand with your back against your building in the middle of a section



(every number in a blue circle counts as a section)

- Get into **Field Test Mode**
- On the Cell Coverage Worksheet record the values for **RSRP**, **RSRQ**, and **PCI**. (Look at page 4 "Finding the Measurements in Field Test Mode" for where to find these numbers.)
- Repeat for each section of your building.

### Inside

- In each of the 2-3 places you picked inside your building, get into **Field Test mode**.
- Record on the Cell Coverage Worksheet the values for **RSRP**, **RSRQ**, and **PCI**.

# Is my cell coverage good or bad?

To learn if your cell coverage is good or bad you'll need to do some simple calculations using your printout.

On your printout you need to know two numbers from the RSRP column – the largest outside measurement and the largest inside measurement. Because they are negative numbers the largest number in both cases are the one's closest to zero. Make sure you mark those numbers.

Once you've marked the numbers you can forget about them being negative for the following equation only – subtract the smaller number from the larger one (like this,  $111-105=6$ ). Put the answer into the house loss space on your printout.

Now take your house loss number, subtract that number from each of your largest RSRP numbers (for example  $-111-6=-117$  and  $-105-6=-111$ ). You will end up with two results, one for outside and one for inside.

Take your results and put them into their "Your Coverage" (bottom right of the form).

Now you're ready to find out what your cell coverage is rated.

Taking the two results from the "Your Coverage" spaces compare them to the RSRP numbers in the Signal Chart on your printout.

Each number will fall into one of the Signal Ranges which will tell you how your coverage is rated.

For example, if your house loss is 6 and your largest, inside RSRP signal is -111, subtracting the house loss from that RSRP signal will give you a result of -117. If we look at the Signal Chart that means your coverage has a poor rating, **which means you have no useable service.**

If your results are in the good or excellent categories, you don't need to do anything to improve your cell service, but if it falls into the fair or poor categories your inside cellular coverage needs to be fixed. The good news is that easy now that you have the data.

Outside		RSRP (pink circle)
example: Front of House		-110
1	Back of the House	-105
2	Right side of the House	-112
3	Front of House	-117
4	Left side of House	-106
5		
6		
7		
8		
9		
Inside		RSRP (pink circle)
example: Home Office		-113
1	Kitchen	-111
2	Living Room	-112

Signal Chart

	Signal Strength	Signal Quality Met	
	RSRP (dBm)	RSRQ (dB)	SINR
Excellent	>-84	>-4	>-1
Good	-85 to -102	-5 to -8	-10 to -12
Fair	-103 to -111	-9 to -11	-7 to -10
Poor	<-112	<-12	<-10

House Loss: (111-105=) 6

Your Coverage

Outside: -111 (fair) Inside: -117 (poor)

# Fixing Fair or Poor Cellular Service

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If your home or office cell coverage falls into the fair or poor categories what options do you have?

First you can test friend's or family member's phones the same way you have your own if they're on different carriers and see if there would be a better wireless service provider for you.

If you don't want to switch carriers or there isn't a better wireless provider in your area then there's a solution to fix your cellular service.

## **A Cel-Fi GO - Smart Signal Booster™ or Quatra™ cellular solution.**

Once properly installed as part of a three piece cell service solution the Smart Signal Booster™ from Cel-Fi Go™ can automatically increase the cell coverage in your house up to **33 times**. The Smart Signal Booster™ can cover about 5-7K square feet using multiple indoor antennas. If you need more coverage or multiple cellular providers, then the Quatra solution maybe a better choice.

These cell service solutions can be professionally installed by us at VentusRF or we can teach you how to do it on your own. Either way we're here to help you.

If you would like to discuss improving your cell coverage or to learn more about how to install the Smart Signal Booster™ head to the "Contact Us" page at [VentusRF.com](http://VentusRF.com) and send us a message.

Please make sure to include a copy of your filled out Cell Coverage Worksheet so we can analyze it and give you our recommendations.

*If your friend or family member's phone is an Android device follow the Android version of How to test your Cell Coverage" found at [www.VentusRF.com](http://www.VentusRF.com) website.*



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VentusRF is a Cel-Fi Reseller



# Cell Coverage Worksheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Phone Brand: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Model: \_\_\_\_\_

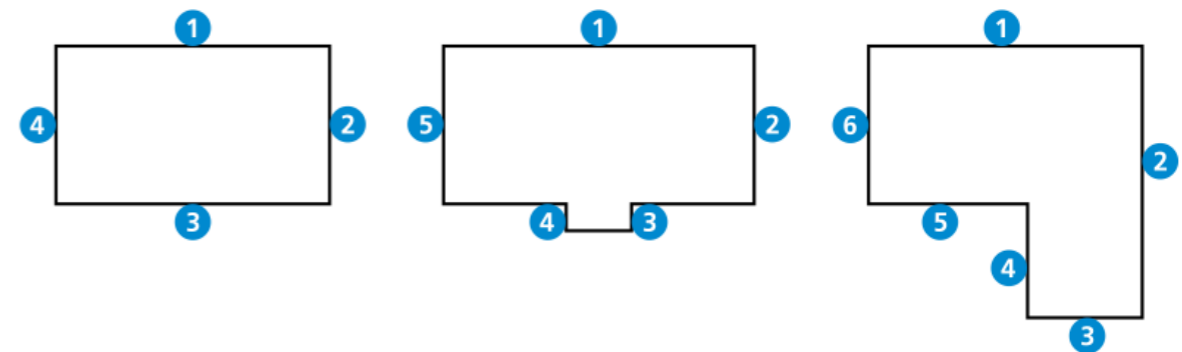
Phone Number: \_\_\_\_\_

Wireless Carrier: \_\_\_\_\_

Email Address: \_\_\_\_\_

Outside	RSRP (pink circle)	RSRQ (white circle)	PCI (orange circle)
example: Front of House	-110	-8	22
1			
2			
3			
4			
5			
6			
7			
8			
9			
Inside	RSRP (pink circle)	RSRQ (white circle)	PCI (orange circle)
example: Home Office	-110	-8	22
1			
2			
3			

Building Shape Examples



Signal Chart

	Signal Strength	Signal Quality Metrics	
	RSRP (dBm)	RSRQ (dB)	SINR (dB)
<b>Excellent</b>	>-84	>-4	>-12.5
<b>Good</b>	-85 to -102	-5 to -8	-10 to -12.5
<b>Fair</b>	-103 to -111	-9 to -11	-7 to -10
<b>Poor</b>	< -112	< -12	< -7

House Loss: \_\_\_\_\_

Your Coverage

Outside: \_\_\_\_\_ Inside: \_\_\_\_\_

# EXAMPLE Cell Coverage Worksheet

Name:         Dan        

Date:                         

Phone Brand:         Motorola        

Address:   

Phone Model:         G6        

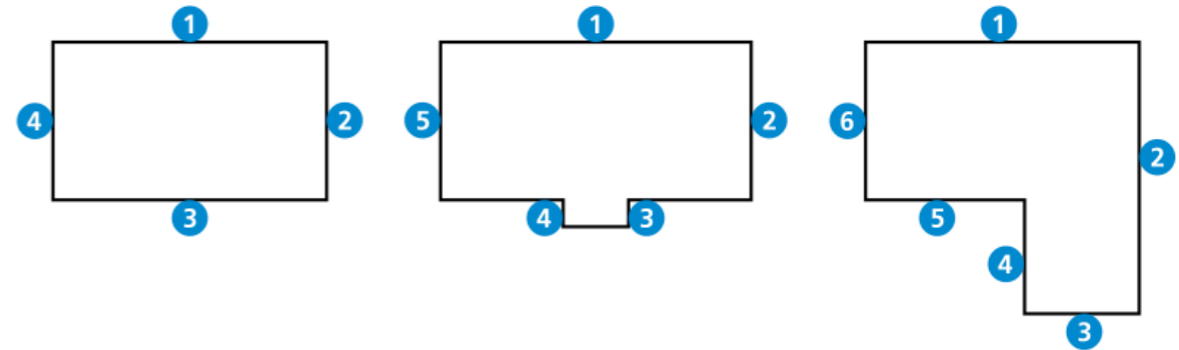
Phone Number:   

Wireless Carrier:         Ting        

Email Address:   

Outside		RSRP (pink circle)	RSRQ (white circle)	PCI (orange circle)
example: Front of House		-110	-8	22
1	Back of the House	-105	-9	28
2	Right side of the House	-112	-11	20
3	Front of House	-117	-14	20
4	Left side of House	-106	-10	22
5				
6				
7				
8				
9				
Inside		RSRP (pink circle)	RSRQ (white circle)	PCI (orange circle)
example: Home Office		-113	-8	22
1	Kitchen	-111	-11	21
2	Living Room	-112	-16	22
3				

House Shape Examples



Signal Chart

	Signal Strength	Signal Quality Metrics	
	RSRP (dBm)	RSRQ (dB)	SINR (dB)
<b>Excellent</b>	>-84	>-4	>-12.5
<b>Good</b>	-85 to -102	-5 to -8	-10 to -12.5
<b>Fair</b>	-103 to -111	-9 to -11	-7 to -10
<b>Poor</b>	<-112	<-12	<-7

House Loss:         (111-105=) 6        

Your Coverage

Outside:         -111 (fair)         Inside:         -117 (poor)