

# Mobile Phone Signal Issues

## Current Situation and Mitigating Technologies Currently Available

### Introduction

Work on the Community Plan showed that Mobile phone signal to the area was an important issue, with 72% of people unhappy with the signal available. This particular item was allocated to the Work & Communications Working Group and forms one of its terms of reference.

### To review the issues raised in the consultation, including the following:

- ✓ To bring to the attention of the major network providers the necessity for all villagers to have access to a vastly improved mobile network service, and to confirm that they comply.

This report has been produced by the Working Group and is intended to set down the current position and suggest some mitigating technologies which could side step the issue for most of the community.

### Background from survey

This report has been produced by a number of laymen who have researched the subject. It is intended as guidance only and some elements will very quickly become out of date.

72% of the people who responded to the survey were unhappy with their mobile phone signal. This was over all of the main networks and there did not seem to be any correlation to service provider.

A check with the independent signal checker Opensignal.com shows a weak signal over most of our area.

Several technical solutions already exist to alleviate the problem of poor mobile signal strength. The following may provide as many as 85% of the people in the village and surrounding area with an immediate solution. In some cases the solutions are available at no extra cost.

### Do some mobile phones make better use of a weak signal?

The transmitter and receiver performance depends strongly on the antenna in the phone and on the way the user is holding the phone to the head during a call. If the phone is not hand held but used in e.g. a hands-free installation or connected to a headset, the phone itself may be placed free of any close-by objects. In this case the ability to collect a radio signal is generally better. This, as you might expect, is a complex issue and there are many on line studies which go into great technical detail. The most up to date study we could find put the top of the range Samsung Galaxy S7 Edge top for coping with low signal.

A probably very unscientific test was carried out in the village using a range of phones from an old Samsung S4 Mini to the latest Galaxy S7 Edge. The S7 had the edge :) but only by a very small margin, which did not appear to be sufficient to solve the problem. Best results were with the phone in hands free by an open window, but this is not a practical solution for every day use. The conclusion we came to was that the phone makes a bit of difference but how it is used is more important. This is however of limited practical value for every day use.

## **Mobile phone signal boosters**

Don't be tempted to try and boost your signal with an illegal mobile repeater - because if you do, poor reception could be the least of your problems. The unlicensed use of mobile repeaters, according to Ofcom, could result in a fine of up to £5,000 and up to a year in prison. Unfortunately, a number of websites still try to pass these devices off as a legitimate solution to signal problems. Some even claim these devices - which are also described as mobile phone signal boosters or enhancers- are exempt from Ofcom's regulations. Don't be fooled. They are not.

It is for this reason that you won't find these particular devices for sale in the High Street or through your mobile phone company. As with any online purchase, check the website's credentials - the website should give a name, address and contact number of those running it. Some addresses are a façade and phone numbers are redirected. Even if the domain name or e-mail address ends with '.uk' it may still be based abroad, making it more difficult to seek redress in the event of a problem.

The use of these devices - many of which originate from suppliers in the Far East - can cause serious interference problems.

### **Legal signal boosters.**

Boosters provided by your mobile phone provider will be legal, as they are covered by their operating license. However, technology appears to be passing this solution by. O2 had one called the boostbox but it appears to be being discontinued as O2 has now got a WiFi calling option.(see later)

Vodafone has one called Sure Signal which can register up to 32 numbers and up to 8 devices can connect at once.

Because Sure Signal works through your broadband internet, it can create a 3G signal even in areas with no reception. Although it works with the majority of broadband providers and most routers, not all are compatible and it won't work on satellite broadband.

Requirements; - To use Sure Signal, you'll need a 3G-capable phone that's on Vodafone and a standard domestic broadband connection.

If you want to have the maximum of eight calls at the same time, you'll need a download speed of 4.13Mbps. This is 'real world' speed, so if you're using the internet heavily at the same time it may affect the performance of your Sure Sign

The cost of the device is currently (feb 2017) £69. Around 30% of the local community are using Vodafone, so this may be a solution for a significant group.

## WiFi Calling

Phone calls made from mobiles traditionally use the network of masts you see dotted around the countryside and throughout cities. However, the reception is often patchy, especially in rural areas or deep inside buildings: which is where Wi-Fi calling comes in.

Wi-Fi calling allows you to make phone calls and send text messages over wireless internet networks rather than over the connection that you normally use that is generated by mobile phone masts.

All sorts of Wi-Fi networks are compatible with the service. That includes the one you pay for at home, as well as public ones in coffee shops, airports and train stations.

If you are somewhere without mobile reception but with Wi-Fi, such as an underground station, you only need to connect your smartphone to the network to make a call.

Some networks allow you to move seamlessly between Wi-Fi calling and 4G calling, so your call won't drop out, if you move out of Wi-Fi range.

Not all smartphones can make calls over Wi-Fi. UK carriers that offer Wi-Fi calling in some form are EE, Vodafone, Three and O2.

This list is likely to change rapidly so do check on line to keep yourself up to date.

### **Vodafone Wi-Fi Calling Option** (around 30% of the local community are on this network)

Vodafone offers this service to pay monthly customers with an iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus or iPhone SE.

Pay monthly customers with a Samsung Galaxy A5 (2016), S6, S6 Edge, S7 or S7 Edge can also access Wi-Fi calling, but only if the phone was bought directly from Vodafone.

Vodafone doesn't currently provide a solution for calls dropping out when you move out of Wi-Fi range, but this is not such a problem when you are home based.

### **EE Wi-Fi Calling Service** (Around 24% of the local community use this network)

Works for pay monthly customers on a wide range of handsets from the likes of Apple, Samsung and LG. EE also offers the service for pay as you go customers with a Harrier Mini or Microsoft Lumia 550. There is a [comprehensive guide on EE's website](#), with easy to follow steps that even the biggest technophobes can easily get their heads around.

So long as you have an EE 4G Calling enabled phone and you're in an area of EE 4G cover, your call will switch between Wi-Fi and 4G to prevent your call dropping out. Not likely to be too much help in the village.

### **3 Wi-Fi Calling** (a very small number of the local community)

Three has recently rolled out Wi-Fi calling, allowing users of its network to make and take calls whenever they're in a place that has no phone signal.

It currently works with Samsung's Galaxy S6 and S6 Edge, LG's G5's and iPhones including the 5c, 5s, 6, 6s and 7. Three has promised that the Galaxy S7 and S7 Edge will be compatible with Three's Wi-Fi calling soon.

Three also allows selected Android devices to switch seamlessly between 4G and Wi-Fi

## **O2 Wi-Fi Calling** (31% of the local community are thought to use this provider)

O2 pay monthly customers can use Wi-Fi calling provided they have an iPhone with iOS 8 or higher, or an Android phone with Android 4.0 or higher (4.0 was launched in 2011).

To use Wi-Fi calling on O2, you'll need to download the [TU Go app](#) which is free of charge.

### **Other apps**

Popular services such as Skype, Messenger and WhatsApp also offer the chance to make calls over Wi-Fi. However, these services only work if the other people calling are using the same app. True Wi-Fi calling systems like the O2 TU Go app will work seamlessly with other mobile network users.

Wi-Fi calling is generally FOC as part of existing contracts as mentioned above.

### **Real-World Use in the Village**

As a result of the research done to produce the report, I decided to change from GiffGaff to O2 so that I could use the TU go app (O2 Wi-Fi Calling). Having had the system for just over a week, I would like to make the following observations;

Before the change it regularly took hours to receive a text and hours to send one. The new system is almost instantaneous with no more hanging out of the window to get a signal. I have had no issues with this and it makes following deliveries, when the delivery is being tracked by text, a breeze.

Voice calls, before the upgrade, were almost impossible and I would normally get a voice mail hours after the call, or the next time I traveled into civilization. Using Tu go, most of my calls have been 100%. I have had one call which failed due to heavy Internet use at my end (this was a test) and another where the caller could not hear me but I could hear them perfectly.

To use the app, I had to download it from Google Play (it is free provided you are an O2 customer). You open it set your number and let it import your contacts and set it to your default messaging system. For outgoing texts/voice you open the app and proceed to call, dial or text from within the app. To receive, you just answer the phone as normal. Apart from remembering to use the app for outgoing messages, it is very easy to use. Early indications are, that for those of us in the village, this is a solution to the weak signal issue.

### **Broadband**

As Wi-Fi calling requires Broadband internet (or its mobiles equivalent) you may find our 2016 report on Broadband in the area of some use;

<http://churchbroughton.com/pdf/broadband/Church%20Broughton%20broadband%20report%20071116%20V2.pdf>

### **What's Next?**

The Work & Communications Working Group are under the impression that very few members of our community are using the above technologies. We would welcome comments from the community on this and the effectiveness of these solutions. If the above solves the issue for most people then the Working Group does not intend to do further work in this area.