For the purist, no, this isn't "real" ham radio. But for the amateur living with significant antenna restrictions, it provides a way to stay in contact with other hams around the world … for peanuts! K3BEQ takes us on a tour.

"Peanut" for Amateur Radio

BY MURRAY GREEN,* K3BEQ

I f you are interested in communicating with radio amateurs worldwide with noise-free audio rich in high definition (HD) quality, may I recommend trying a relatively new program and app entitled "Peanut for Amateur Radio"? Developed by Dutch radio amateur David Grootendorst, PA7LIM, it allows voice communications using Windows™, an Android™ phone or network radio.[1] It also permits QSOs between DMR and D-STAR as well as offering gateways to P25, NXDN, Fusion, and WiresX. Designed exclusively for radio amateurs, it can be especially useful to those who reside in facilities with antenna restrictions.

The dynamic audio coupled with a very quiet noise floor virtually guarantees you will hear everything, even if you have hearing problems. It can also be used for mobile and portable operation with your Android phone or network radio. Similar in ways to Echolink (e.g., a D-STAR version perhaps), there is no comparison, however, to the Peanut HD audio quality when communicating with other Peanut users. It is addictive and once you

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Figure 1. Peanut receive mode screen. See text for details.

engage in it, other audio systems will seem so much less.

Operating the Peanut Network Via Windows

Let's take a look at how you can operate the network from your desktop, Android, or radio. After registering (more on this below) and downloading the program, you will see an image similar to *Figure 1* on your monitor screen. If a QSO is in progress in the "room" you join, the callsign and first name of the

transmitting station will appear on the screen (*Figure 1* shows what another ham would see when logging into a room in which I was already in a QSO), along with the "room" name and other information. A room on a chat site is kind of like a special interest net, where people sharing a common interest "hang out." A drop-down list (*Figure 2*) shows all of the rooms available. The English Room, for example, is one of the more active rooms and has a host of DX stations who use it. It is not unusual to hear JA, VU, G, and A4 amateurs
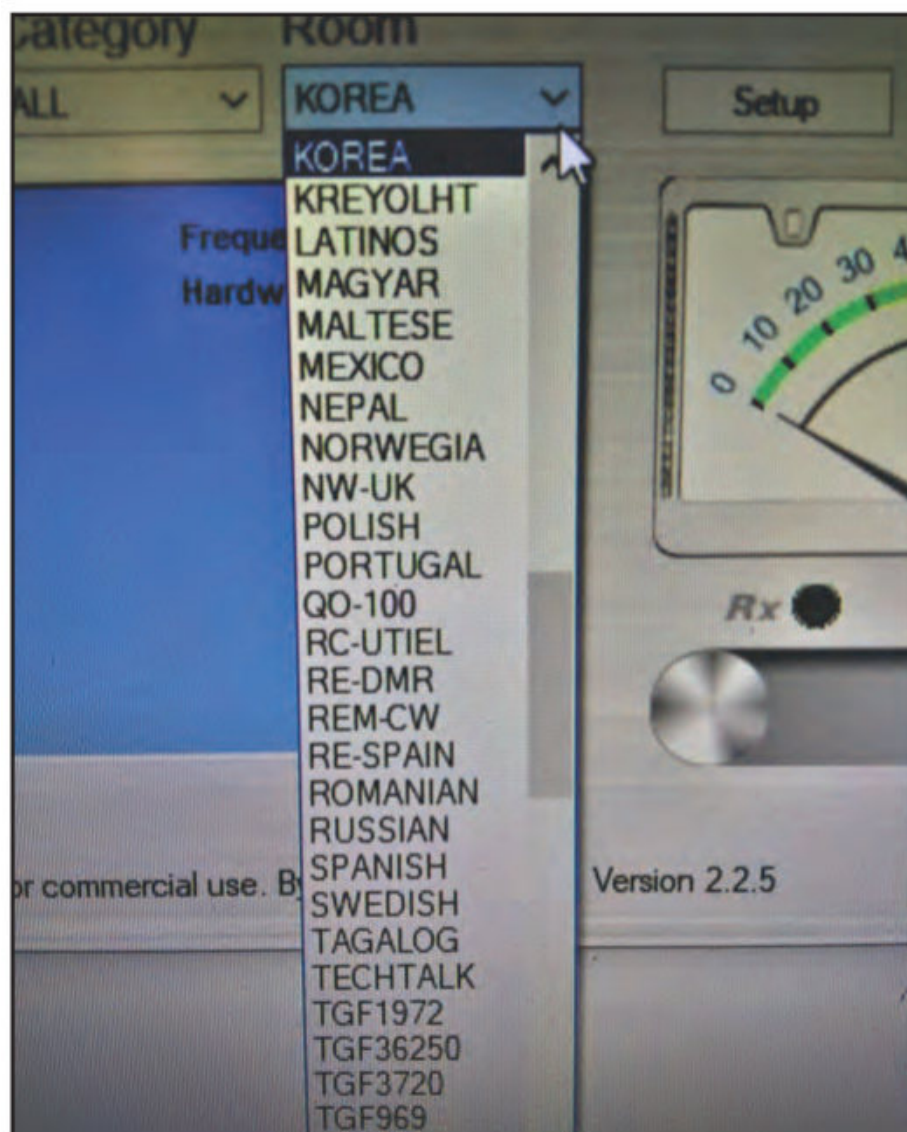
Figure 2. A list of available "rooms" for QSOs may be accessed through a drop-down menu.

Registration

Since the Peanut network also provides access to D-STAR and DMR, a registration process is required for all three systems: To see if your call is already registered with either DMR or D-STAR, go to <https://www.pa7lim.nl/callcheck/>.

1. Peanut Registration:

a. To get access to the Peanut network, you need to register at <https://register.peanut.network>. A copy of your amateur radio license is required. Once you receive your Peanut code, you can use all HD local rooms and multiple D-STAR connected rooms.

b. Free Windows and Android software can be downloaded at: <www.pa7lim.nl/peanut/> (Windows 7 or higher with minimum .NET 4.5; Android 4.X or higher.)

2. DMR:Registration:

European users may register at: <https://register.ham-digital.org>; non-European users may register at: <https://radioid.net/register#!>.

3. D-STAR, D-PLUS Registration:

To access and see the D-STAR and D-PLUS reflectors (rooms starting with REF, REF 084C, etc.) you need a D-STAR USTRUST registration. You may register at: <https://tinyurl.com/5l3m4h>.

It Isn't Complicated!

Don't be intimidated by the registration processes. It is not that difficult. Just follow the instructions at each site. It may not always be immediate, so be patient. Once you are registered, you will receive applicable registration codes and be on your way to operating in the Peanut network.

there, calling or having a QSO. It is not a constant stream of activity but enough to satisfy many amateurs' desire to communicate.

After the QSO ends, you can call one of the stations by simply sliding the toggle switch under the meter to the right or by pressing your keyboard. The reverse applies as well. The meter shows incoming and outgoing audio strength. A 3-minute reverse countdown timer appears when the toggle switch is turned to transmit and the screen turns to a different color, as seen in *Figure 3*.

If there are no QSOs in progress, no callsigns will be shown. Calling CQ is okay but most stations simply say: *"This is (callsign) listening for a call,"* as is common on analog repeaters.

There are over 20,000 hams registered to the Peanut network. In my operating experience, I find more activity on Peanuts than my local repeaters and Echolink. And where else can you call CQ and have an amateur radio opera-

tor from an exotic country answer you in HD audio quality absent of white noise, fading, and interference?

The listing to the right of the meter contains the rooms you select to automatically scan. (Scanning is available only on the Windows version.) The operator has the option of scanning or viewing the last stations heard via an icon at the top of the scan listing.

The local (within Peanut only) language-based rooms like English, Dutch, Spanish, Japanese, USA etc., are in HD quality. The rooms marked REF030C, XRF076C. etc., are linked to D-STAR and are transcoded with AMBE3000 chips located around the world. Referred to as "reflectors," they are simply computer-based central points for repeaters and amateur operators to go to for communicating with each other.

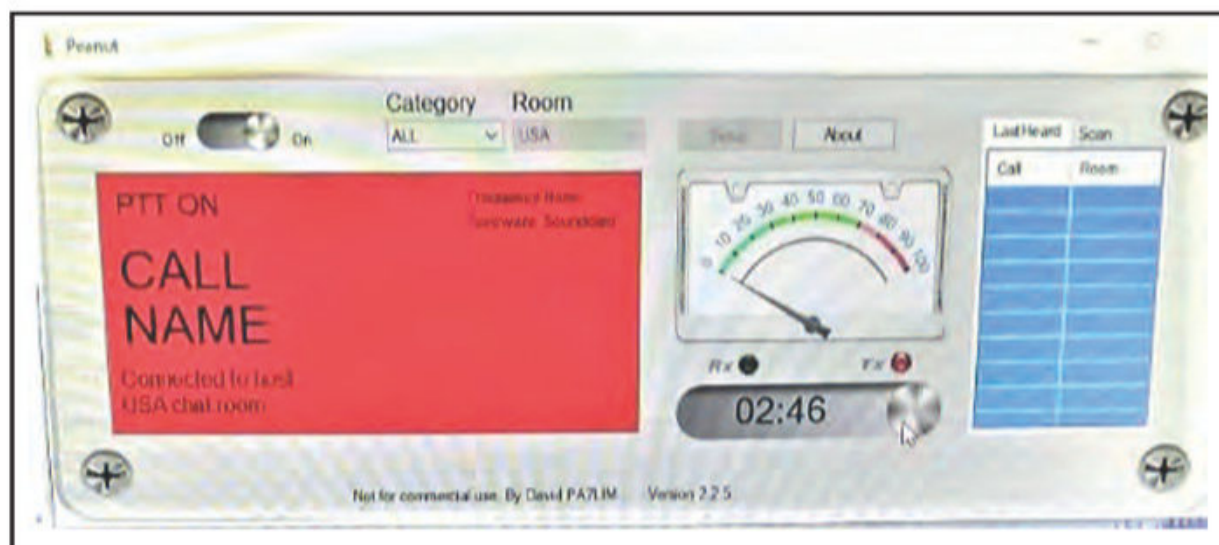A complete listing of all Peanut rooms and locations can be found at: <http://peanut.pa7lim.nl/rooms.html>

Android and Network Radio

The basic operation is the same as Windows except the images may vary to accommodate the unit's size. On the

Figure 3. The Peanut display changes color when in transmit mode.

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Photo A. An Android phone using the Peanut app. As shown, it is in the receive mode.

Android there will be a push-to-talk (PTT) touch icon on the screen for transmitting and receiving (see *Photo A*). For network radios (*Photo B*), the microphone push-to-talk feature is used, just like on a traditional radio.

Dashboard

There is also a separate listing that shows amateur radio stations connected to specific rooms. This is a valuable tool to find out where the activity is. The listing updates every 10 seconds and is normally referred to as a *dashboard* (*Figure 4*). The listing can be accessed at: <http://peanut.pa7lim.nl/>. Place it next to the Peanut image in a split-screen view on your desktop monitor for ease of operation.

In Conclusion…

In my use of the Peanut network, I not only found incredible audio quality but instant contact with amateurs around the world who like to converse and exchange information. I have been licensed in the amateur radio service for 70 years and have yet to come across anything close to the HD audio experience of the Peanut network.

Peanut and other types of amateur digital systems are very sophisticated and maintained by very talented ama-

Things to Know from the Developer

Peanut developer David Grootendorst, PA7LIM, offers the following tips and information nuggets about the system:

• *Peanut is beta. Use it at your own risk.*

• *Do not use Peanut to interlink other systems!*

• *You do not have to disconnect to change a room! Just keep connected and select a room.*

• *Peanut for Android uses port 6667 UDP to the internet. It is NOT necessary to open ports from the internet to the Peanut device.*

• *You do not need an AMBE3000 vocoder (voice encoder) for Peanut to do D-STAR and DMR. So you have free digital voice.*

• *There is no iPhone / iPad version of Peanut. Apple does not support experimental projects.*

• *Peanut runs very nice on network radios like the Inrico TM-7.*

• *Do not drive and Peanut. Always watch the road!*

• *The app does not work in the background!*

• *You can also use Peanut on Windows with a DVAP (use an analog radio).*

• *I am not a company! I write code when I return from work and mostly at night.*

• *DSTAR reflector administrators can add their reflectors if they have an AMBE3000 server with ThumbDV or DVStick30. Complete solutions are from ZUM AMBE board and Japanese XLX team. see: <www.pa7lim.nl/ambeserve>.*
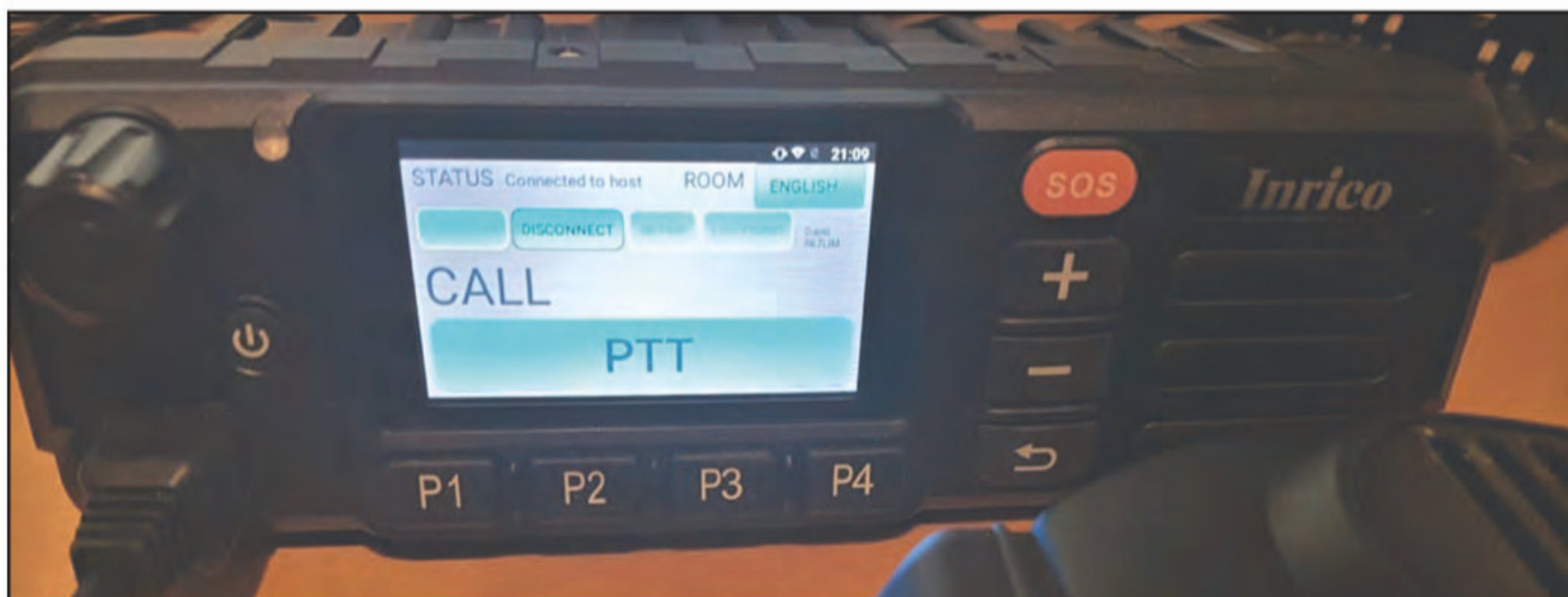

Photo B. A mobile "network radio" using Peanut. The screen shows no activity at the moment this photo was taken.
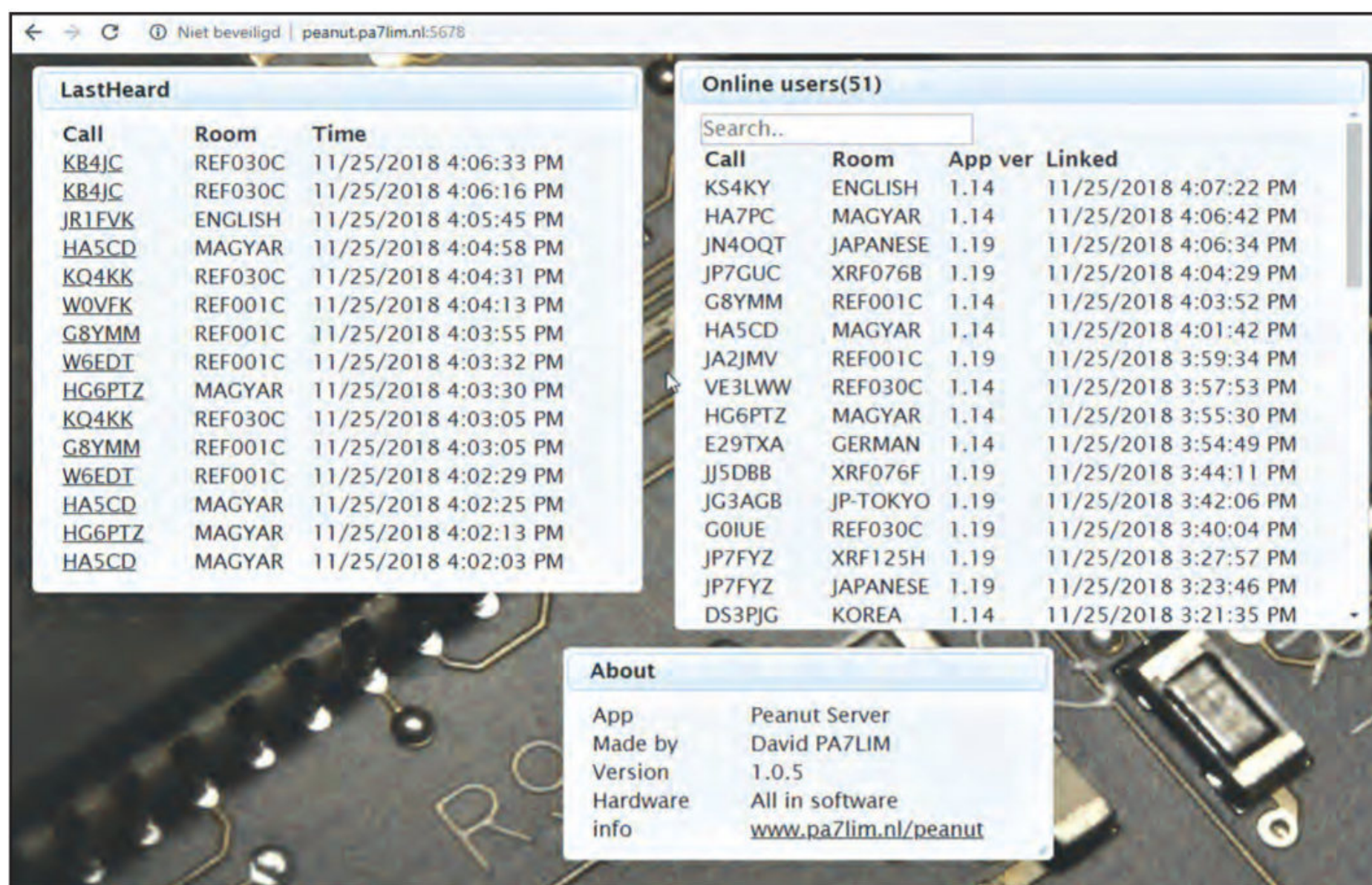
Figure 4. The Peanut dashboard displays lists of stations recently heard (top left), currently active (top right) and other information.

teur radio operators who have dedicated equipment, time, and funds so that you can enjoy the fruits of their labor, gratis. I am certain that once you try Peanut, you will reap the benefits of the digital world, find new friends to converse, and have an outstanding audio experience. Let's talk…

Acknowledgement

I would like to thank Ian, G3ZHI, for his support and input to this article. Ian is a regular user of the Peanut network and can usually be found in the English room. He is a new and good friend.

Notes:
1. Network radio is a hybrid between traditional RF radios and the internet. Designed to look, feel and operate like a traditional two-way radio, network radios use Bluetooth or WiFi to connect to the internet through the cellular network.

About the Developer of the Peanut Network

David Grootendorst, PA7LIM, is a Linux / Network / Cloud consultant for a company in the Netherlands. He holds the Full Amateur license of the Netherlands, which is similar to the U.S. Extra Class. Peanut was an experiment that now has over 20,000 registered amateurs worldwide. For more of David's experiments on video and additional bio, go to: <www.pa7lim.nl/about/>.

On behalf of the amateur community, I want to thank David for his untiring efforts in developing the Peanut network. I consider him to be a pioneer in digital experimentation.