Can A Satellite Read Your Thoughts? - Physics Revealed - Part 3

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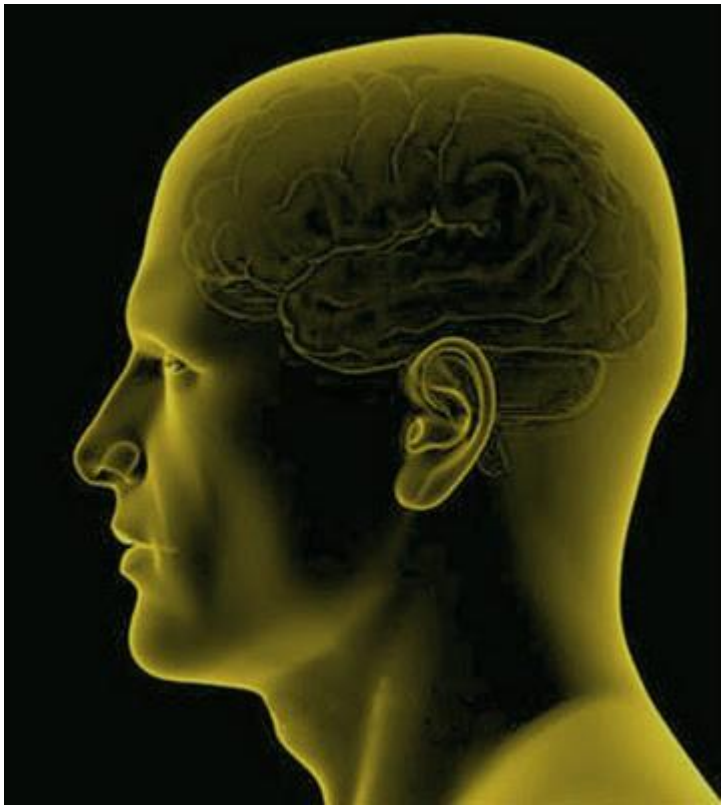

Seeing right through you...taken to a whole new level.

In the last couple of articles, I began an analysis to determine if it was scientifically possible for thoughts to be read by a satellite. With some ballpark figures, I was able to show the weak radio emissions from the brain could be detected at orbital distances and the basic structure of the signal processing architecture. In this article, we are going to return to our analysis on the detectability of radio emissions, from the human brain, and obtain some refined figures.

Hopefully, by the end of this article, we will have a series of magic values that our engineering standards would need to meet for this system to be a reality. Note that when we come to deal with the trilateration of the signal, to identify the frequencies associated with the target, this stage is only required if you want to perform automatic frequency acquisition at orbital distances. That is, the short-cut would be to pull up in a van beside the target and perform the frequency acquisition at close proximity.

In the first article, we showed that body does indeed produce signals in the ELF/SLF/ULF bands. The only potential source is the firing of neurons, regardless of their function. It turns out this is already known, as the Defense Technical Information Center (DTIC) cites the following information to the DoD (note: from 19th Aug 1977):

The writer discusses Kogan's calculation on information transmission. While he points out that the calculations should not be considered as proof of the validity of the magnetic nature of telepathic signals nor if the existence of telepathy, he suggests that, if telepathy exists and if it takes place by means of radio waves, then one should look in the range of wavelengths of 300-1000 km.

I felt it best to reduce the source of the transmission down to neuron level. Running the numbers, if all we are doing is determining the presence of a signal on a particular frequency, the amount of data is quite low if represented in binary array. The figures are as follows:

For 100,000 neurons
100,000 bits
12,500 Bytes
12.20703125 Kb
0.011920928955078125 MB

For 100,00,000 neurons:
100,00,000 bits
12,500,000 Bytes
12,207.03 Kb
11.92MB

At the lower end of the data scale, that's about 10 thousand targets with a gigabit throughput. Any satellite, of course, would require a dynamic filter to supply only target information.

I tried to track down better figures for the power of a neuron. The best I could find was model, based upon squid neurons, designed to replicate the Hodgkin Huxley neuron. Given its role as a medical model, it should be pretty accurate. Replacing our previous value of the average power per cubic centimeter, we will now recalculate the power density. This time, obtaining the power density of a single neuron at source:

0.003 V x 0.00000693 A = 0.00000002079 Watts

Next we will calculate the power density at an orbital distance of 500Km. This will give us the first of our magic numbers that our engineering standards must meet, the ability to detect this power density. We will also calculate the Decibel Watts of the signal at this distance:

Neuron at 500Km
PDs = 0.00000002079
PDr = 6.617662533761008061270186881029 1e-21
dBW = -201.79295383362664671003768348 69

To create a box, of 10m^3, around the target, we need to know the power density of a 10m shift in position of the signal. For illustration purposes, the next calculation shows both the power density and Decible Watts 10m further than our above calculation:

Neuron at 500.01Km
PDs = 0.00000002079
PDr = 6.617397835200640901553868365673e-21
dBW = -201.79312754968225324518067477465

This brings us to the second and arguably most important figure, the sensitivity of the receiver in Decibel Watts. This figure represents the tolerance required to maintain a 10m box around the target at all times at an orbital distance of 500Km.

dBW = 0.000173716055606535142991287701074 89

To achieve this level of accuracy all sources of error, from electronic to propagation, must not exceed this tolerance for any significant period of time. It is important to note that while these figures are still rough, achieve this level of sensitivity and this system will work. The only real issue is one of engineering, not if it can be done.

Imagine what I could do with defense budget and a space program. Now picture what has already been done with the defense budget and the space program.

URL http://deepthought.newsvine.com/_news/2010/10/03/5223971-can-a-satellite-read-your-thoughts-physics-revealed-part-3