Evidence of microwave harassment: *Correlations among microwave detector response, apparent locus of bodily sensations, and apparent intensity of discomfort.*

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This paper is a slightly revised version of a report to Chief Charles R. Arolla of the Santa Clara Police Department, dated 2000-07-14. It briefly describes my analysis of data from a *MicroAlert* microwave detector device.

The data were to establish physical evidence supporting my reports of harassment. I recorded the *MicroAlert* response simultaneously with the subjective location on the body, and severity, of the pain or discomfort.

The *MicroAlert* is a small, battery-powered pocket device which ticks at a rate monotonically related to the intensity of microwaves impinging on it. It is sensitive from a few hundred kHz to a few GHz, but it is less sensitive in this band than a tuned receiver such as one for radio or broadcast TV. The microwave transmitter(s) being used by my neighbors obviously interfere with TV reception and cause physical discomfort; however, they seem not to trigger much *MicroAlert* response.

To use the *MicroAlert*, I therefore resorted to a large enough statistical sample to reveal the imperceptibly small changes in tick rate which had to be occurring during changes in the microwave attacks. The data presented below are a representative subset (about two-thirds) of data recorded under standardized conditions from late 1999 through early 2000. The conditions are described briefly below.

Background Information

First, some electrical observations. As described in previous reports on file, the harassment seems to be by microwaves delivered in streams of brief, hard-to-record pulses. Consistent with this, I have found so far that my *MicroAlert* microwave detector generally is silent in my apartment. However, there are two circumstances in which I get a strong, predictable *MicroAlert* response:

(1) I have a 6' x 4' x 1/4" aluminum plate on the floor in front of my computer desk. If I place the *MicroAlert* near a corner of the plate, it begins ticking rapidly. I believe this is because of microwaves being bounced off the ground below my (ground-floor) apartment. Microwaves hitting the plate from below or from the side would run along the edges of the conductive plate and would be concentrated at corners (similar to static electrical charge), where they would be radiated strongly enough for *MicroAlert* response.

(2) If I place the *MicroAlert* on top of a piece of sheet-metal furniture near my computer desk, the *MicroAlert* is silent; however, if I bring my hand near the *MicroAlert*, it begins ticking rapidly. This is because my body is acting as an antenna. The grounded metal allows microwave current to be drawn from my body and pass through the detector antenna on the way to ground. With the *MicroAlert* between my hand and the ground, the *MicroAlert* is able to respond to my entire body. This would be consistent with radar monitoring of my movements within my apartment.

Neither of (1) or (2) seems related to computer operation or even to electrical power, which I have turned on and off at my fusebox with no effect on the sensations. As in previous reports, electrical power failure to the apartment complex DOES stop the harassment.

Second, observations related to subjective sensations. I often feel the harassment as skin discomfort, headache pain, or tinnitis. Also, when experiencing tinnitis symptoms while wearing TV audio headphones, I can feel "electrical" effects (tingling; spark-like pinpricks) wherever I touch the headphone wire with my hand.

To document this second kind of evidence, my assumption was that my body would be acting as a receiving antenna for the microwaves responsible for the harassment symptoms; so, the rate of *MicroAlert* ticking near my body should correlate somehow with the symptoms.

Data Protocol

To achieve some consistency, I defined a data protocol as follows: I recorded *MicroAlert* response while seated at my computer with feet on my metal floor plate and watching my pocket TV and with audio through a set of headphones. I made a plastic holder for the *MicroAlert* which held it in a predictable relation to the headphone wire. I also set an alarm on my computer to signal every 15 minutes.

On each 15-minute signal, I stopped computer work and recorded the date and time by voice onto a tape recorder, also giving the location and severity of harassment symptoms, using a chart of numerical codes. I also gave the TV channel and my seated posture, in case they might be important (they have not been analyzed yet). Then, I placed the *MicroAlert* in the plastic holder and brought the tape-recorder microphone up against the *MicroAlert*. Generally, the *MicroAlert* would begin ticking so long as it was near the wire to the headphones; the plastic microphone had no noticeable effect on the ticking. I recorded a nominal 3-second sample of the tick rate. Again, this was done every 15 minutes.

I did no data analysis until completion of all recording. After two months of data collection and approximately 20 full hours of audio tape, I transcribed the tapes onto computer audio (`.wav`) files. I then abstracted the tapes with the help of spectral analysis software and manually entered the data into a Microsoft *Excel* spreadsheet. The *Excel* data then were transferred to the ***Statistica*** software package, which was used to generate the results below.

I have not kept all the computer audio files, but I still have the tapes and can recreate the intermediate files if required as evidence.

Results

Below are what I have found for *MicroAlert* tick rate (ticks/s), intensity of symptoms (0 = none; 9 = unbearable pain), and locus of symptoms (none; 1 near feet and 9 near head); these raw ratings were rescaled monotonically for analysis in a way irrelevant here).

This document was created in Microsoft Word. I can supply a floppy disc with a PDF copy of this document which should permit the graphs to be examined magnified (use Adobe Acrobat Reader or GhostView).

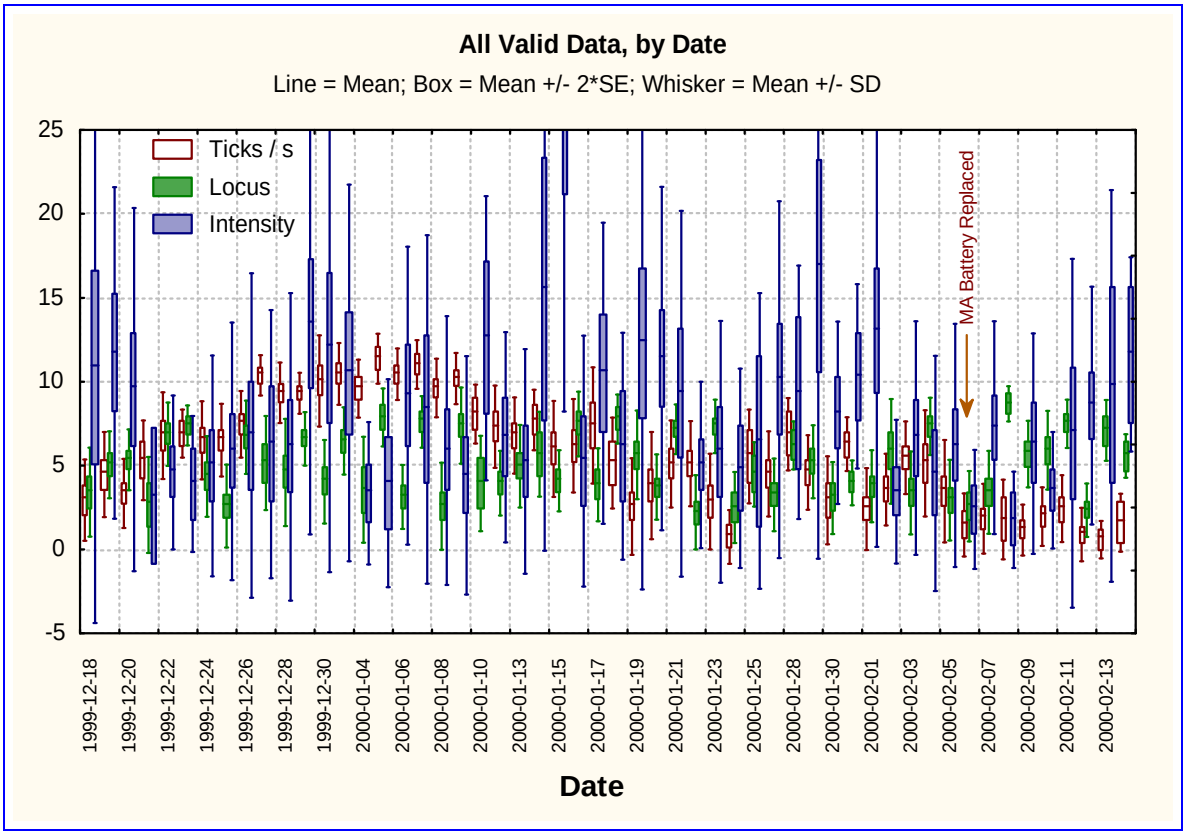

Figure 1. Daily averages of all valid data, by date. About a dozen scattered data have been deleted from the total of about 1500, because they were noted as not valid at the time they were recorded (for example, forgot to have feet on floor; *MicroAlert* was off).

Figure 1 shows that the recorded tick rate seemed to peak a little around the beginning of the New Year, and then slowly declined, but that there was no other obviously visible trend in the data. Replacing the *MicroAlert* battery around Feb 7th had no visible effect on anything. The decline is believed to have been caused by a slow mechanical rotation of the threshold-setting trim pot inside the

MicroAlert. Room temperature was not noticed or recorded, and it probably did not change by more than 5 deg C over the period shown; temperature can not be ruled out as a cause contributing to the drift. In any case, the below analysis factored out the drift, so it may be ignored.

The trend in the tick rate, and the relatively stable subjective data are very obviously visible in the autocorrelation functions for the three, as shown in Figure 2. In Figure 2, the short-period variations in Locus and Intensity are spectrally obviously different from each other and from the Tickrate.

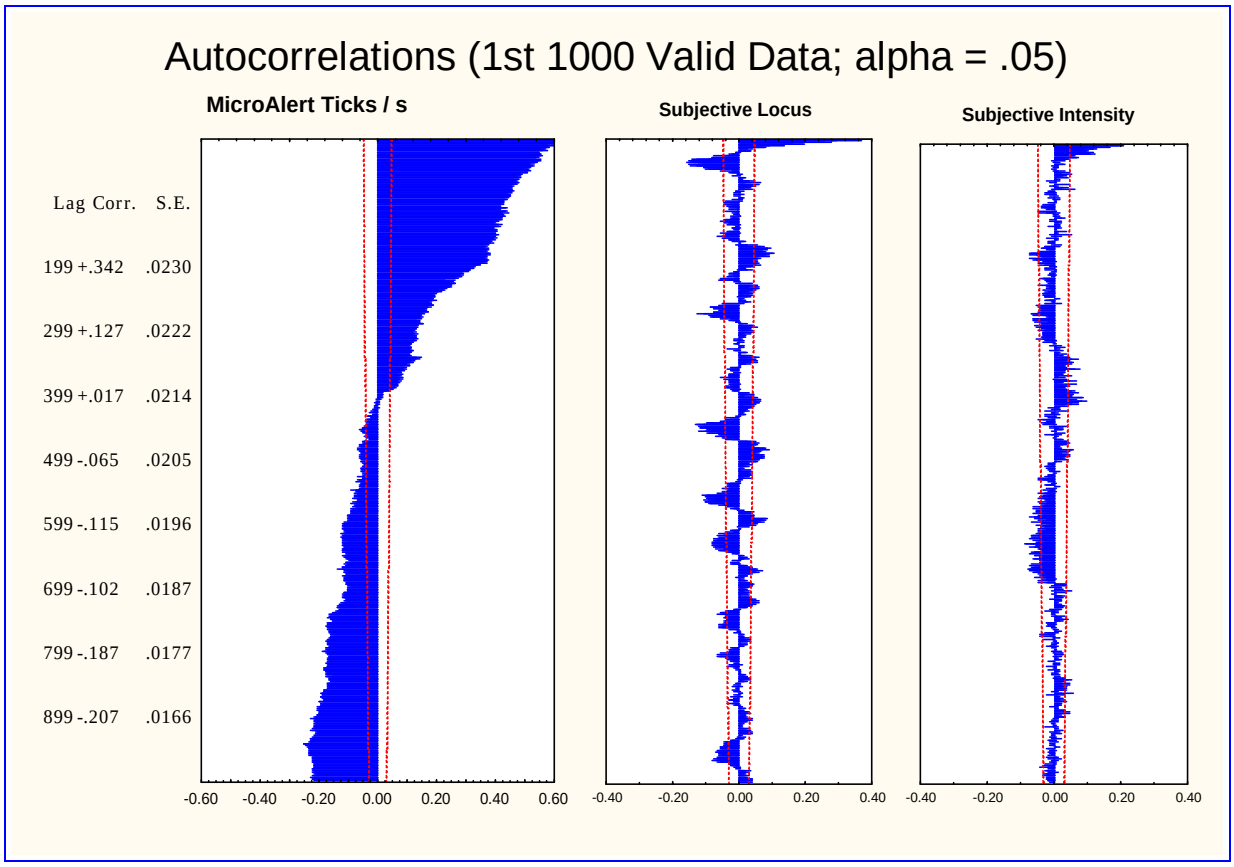

Figure 2. Autocorrelation functions for the three variables analyzed here: *MicroAlert* Tickrate, Locus of discomfort, and Intensity of discomfort. Only the Tickrate lags, correlation coefficients, and standard errors are shown on the left axis. The last 500 or so valid data were not lagged, but were similar; the software can not compute autocorrelation lags greater than 999.

Because neither of Locus or Intensity have the same long-term trend as Tickrate, any dependence among them and Tickrate cannot be because of long term drift; rather, any dependence of Tickrate on the other two must be on a short-term, perhaps daily basis. Thus, the autocorrelation functions lend validity to the conclusion below in Figure 3.

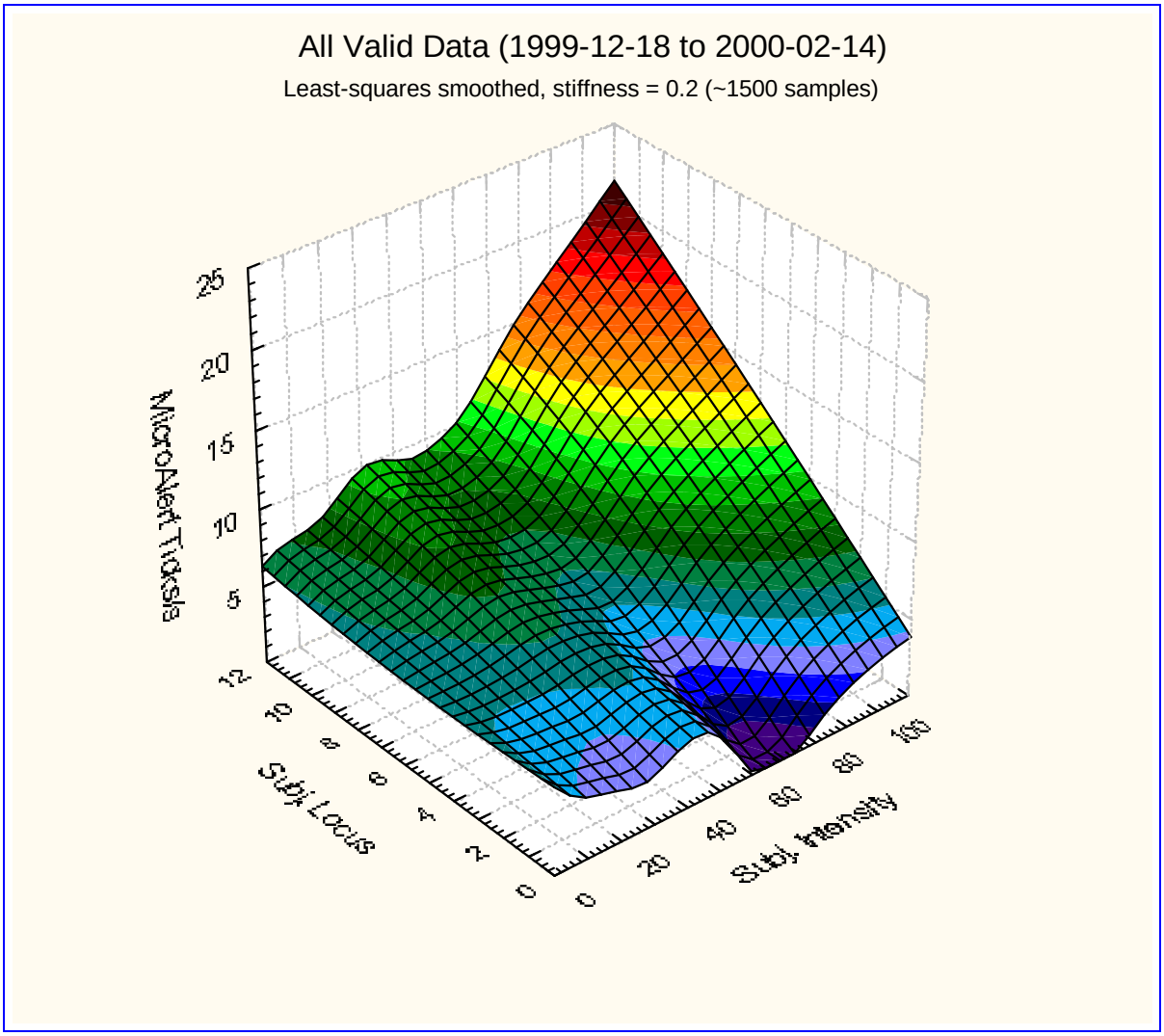

Figure 3. Overall relationship of the recorded *MicroAlert* tick rate to the subjective discomfort and bodily location of that discomfort.

Figure 3 shows that there were very large correlations over the two months. I should mention again that while I was recording data, the tick rate hardly seemed associated with sensations, and I was worried I would be wasting my time.

Conclusion

Clearly, in Figure 3, the tick rate increased as the apparent location of the pain or discomfort moved toward the head, and as the intensity of the discomfort, graded from none to severe pain, increased. This supports the idea that microwaves at least partially detectible by the *MicroAlert* were responsible for the discomfort.

Thus, I present physical evidence that the complaint I have had ongoing now since late 1997, is attributable to microwave radiation.