TABLE 2. *Threshold for perception of rf sound (ambient noise level 70–90 db)*

Transmitter	Frequency, mc	Duty Cycle	Avg Power Density, mw/cm²	Peak Power Density, mw/cm²	Peak Electric Field, v/cm	Peak Magnetic Field, amp. turns/m
A	1,310	.0015	0.4	267	14	4
B	2,982	.0004	2.1	5,250	63	17
C	425	.0038	1.0	263	15	4
D	425	.007	1.9	271	14	4
E	425	.014	3.2	229	13	3
F	425	.028	7.1	254	14	4

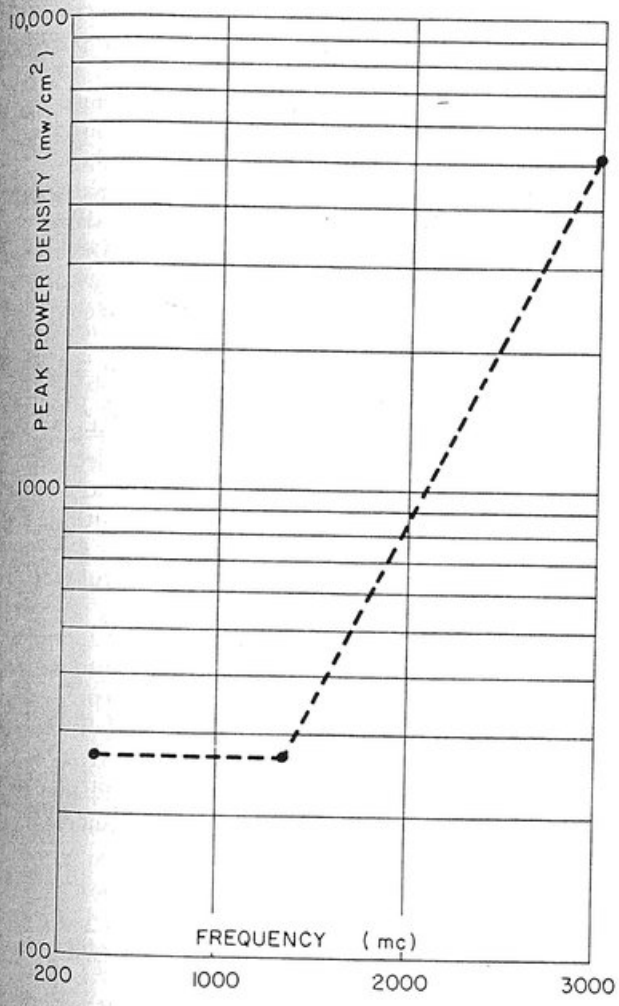

FIG. 4. Threshold energy as a function of frequency of electromagnetic energy (ambient noise level 70–90 db).

above an ambient noise level of 90 db, it appears that the ambient noise to some extent "masked" the rf sound.

Table 2 gives the thresholds for the perception of the rf sounds. It shows fairly clearly that the critical factor in the perception of the rf sound is the peak power density, rather than the average power density. The relatively high value for transmitter B was expected and will be discussed below. Transmitter G has been omitted from this table since the 20-mw/cm² reading for it can be considered only approximate. The field-strength-measuring instruments used in that experiment did not read high enough to give an accurate reading. The energy from transmitter H was not perceived, even when the peak power density was as high as 25 w/cm².

When the threshold energy is plotted as a function of the rf energy (Fig. 4), a curve is obtained which is suggestive of the curve of penetration of rf energy into the head. Figure 5 shows the calculated penetration, by frequency of rf energy, into the head. Our data indicate that the calculated penetration curve may well be accurate at the higher frequencies but the penetration at the lower frequencies may be greater than that calculated on this model.

As previously noted, the thresholds were obtained in a

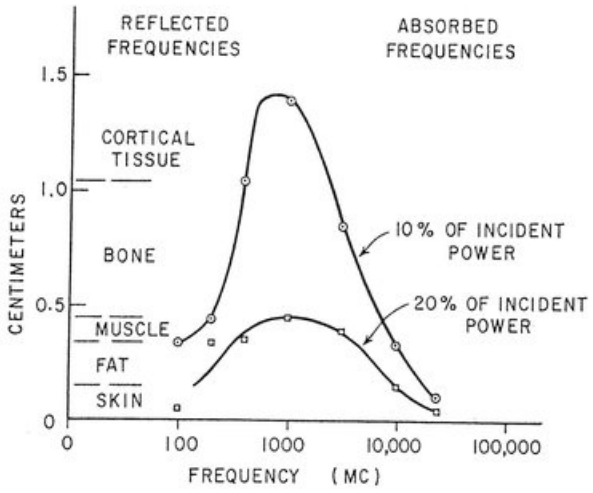

FIG. 5. Microwave power distribution in a forehead model neglecting resonance effects and considering only first reflections (from Nieset et al. (5), modified).

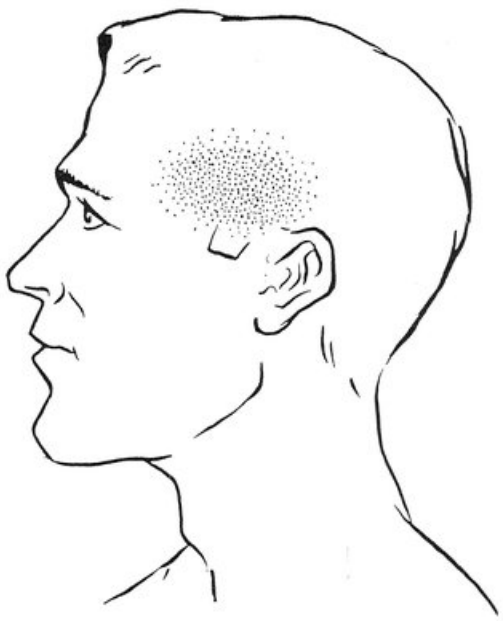

FIG. 6. Area most sensitive to electromagnetic energy (*shaded portion*).