ARIB Activities on EMC and Human Health Effects

ARIB, Japan
May 2004

Basic Activities

- Promotion of research into the impact of RF exposure on human health (1998~200x)
- Public Information concerning electromagnetic environment
- Development and maintenance of ARIB standards and technical papers

ARIB

Purposes of Research

- To obtain scientific data to answer public unease toward short & long term exposure to EMF generated from mobile radio equipment of existing and new generations
- To contribute to the research program of the Japanese MPHPT

ARIB

Experimental Researches

- Promoted 2 studies to confirm the safety of cellular phone RF exposure

1. EMF estimation study in a train carriage:
   (NICT, Hokkaido University and ARIB members)

2. Volunteer study of brain activity effects caused by digital cellular phone use:
   (University of Tokyo)

ARIB

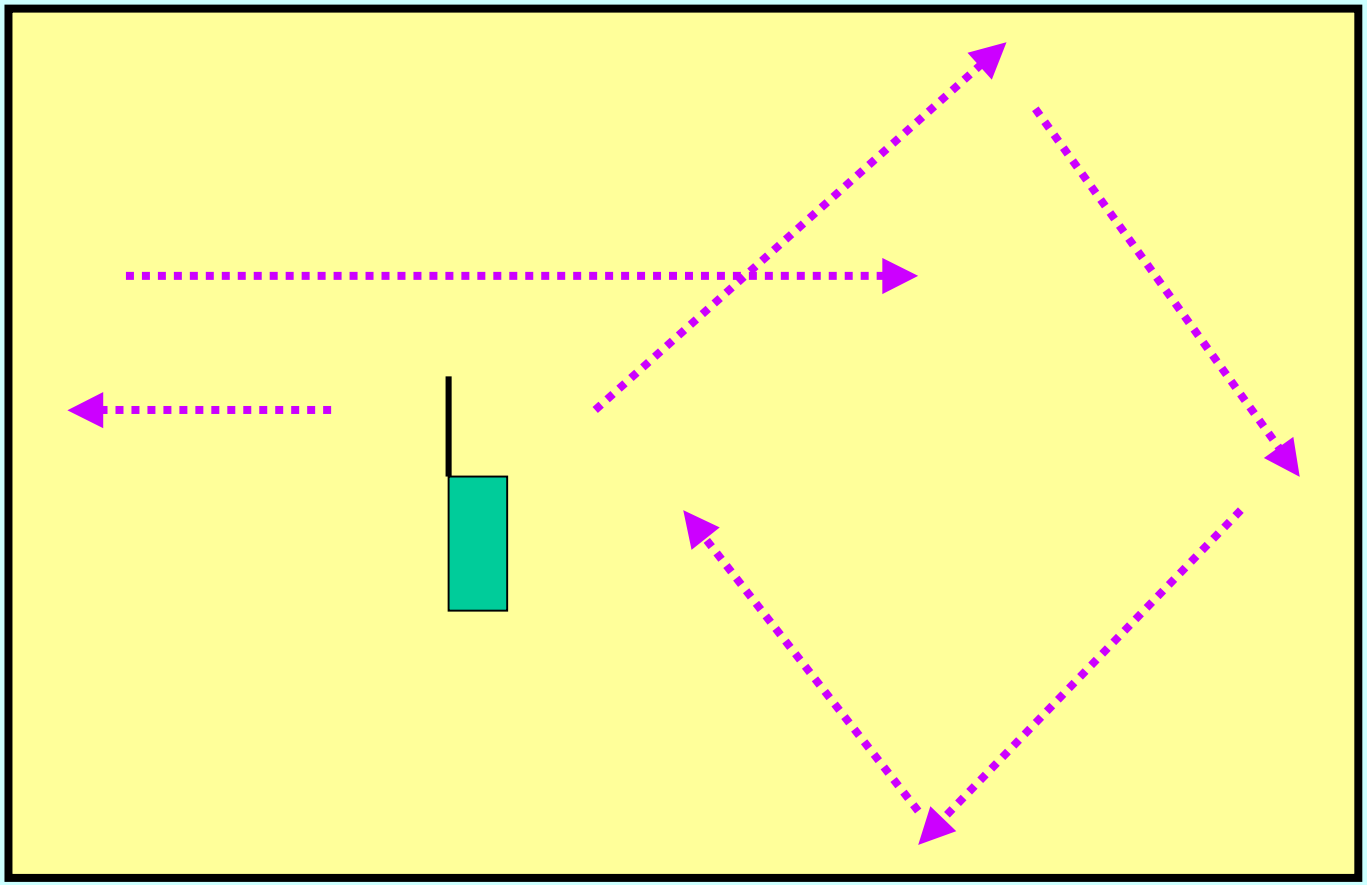
A study on implantable cardiac pacemaker EMI from cellular radios in semi-echoic environments (e.g. train carriage)

There is a concern that the simultaneous use of several cellular phones in a train carriage might cause unexpectedly high exposure levels due to the reflection and accumulation of RF waves inside of the carriage (semi-echoic environment).

We have conducted both precise numerical simulations and experiments to examine this hypothesis in an actual environment. Especially, the cardiac pacemaker EMI is the most important issue to investigate as ARIB from the standpoint of a responsibility for the public.

ARIB

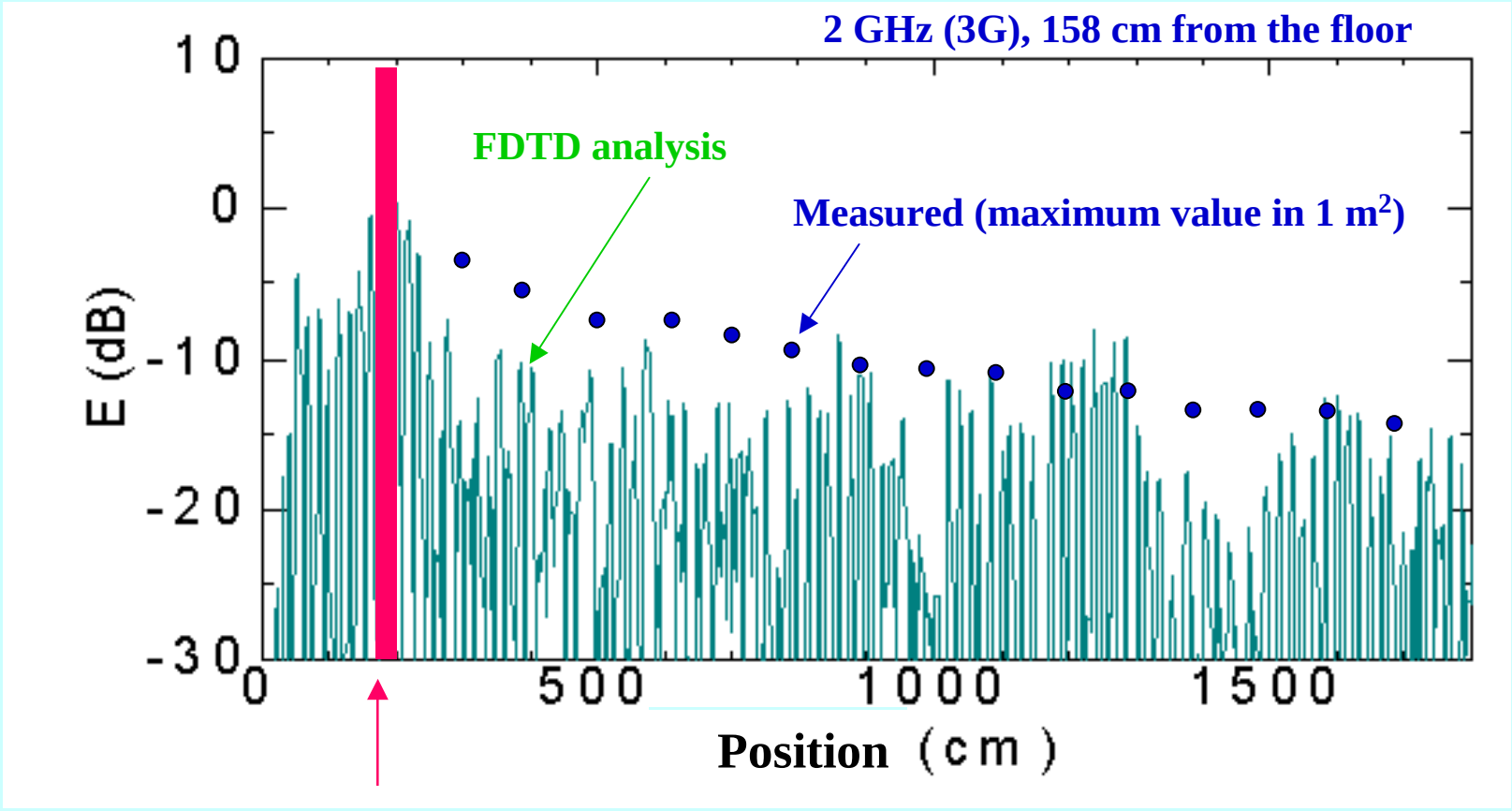
A possibility of accumulated EMF excitation inside of the semi-echoic environment



ARIB

ARIB

An EMF distribution inside of a train carriage



ARIB

Conclusions

It is improbable that the EMF energy transmitted from cellular radios is accumulated in carriages, unlike the case of a cavity resonator that has high Q performance.

Pacemaker malfunction due to cellular radio EMF will not occur at all in a train carriage even if several cellular radios are transmitting RF power at the maximum level simultaneously provided the safety distance guideline is kept.

Farther investigations are required for different types of semi-echoic environments.

ARIB

Volunteer study of cellular phone users central nervous systems

(University of Tokyo)

ARIB

Public Information

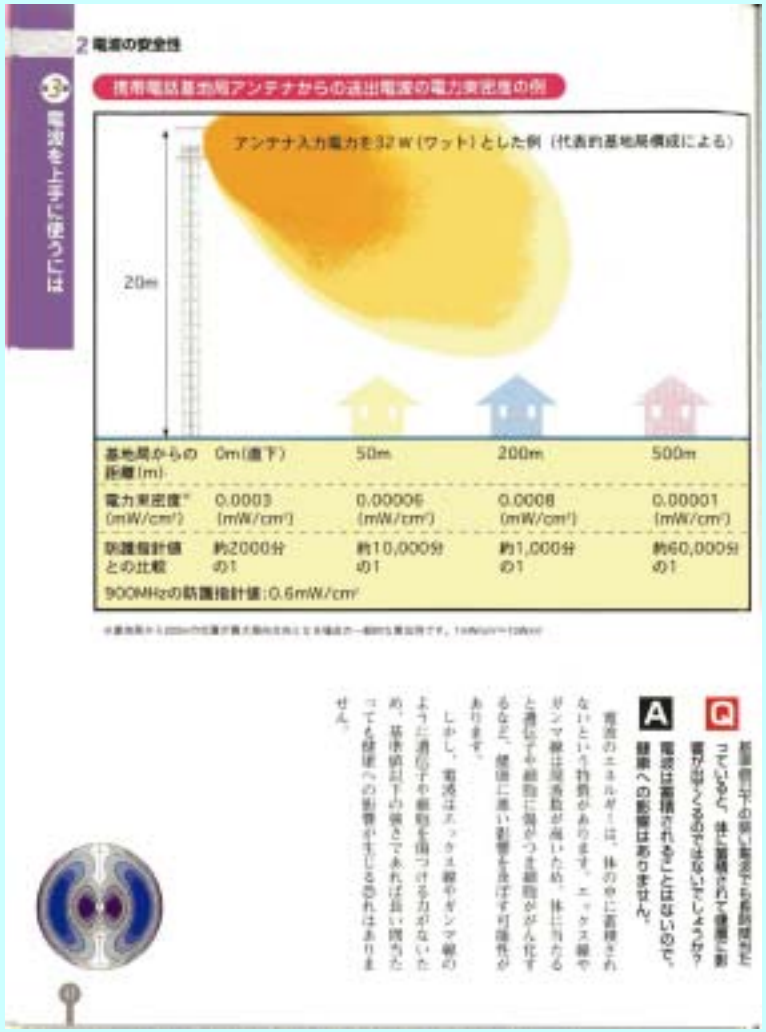
- Internet Web-pages
- Leaflets and booklets;
  Published a scientific book on the safety of RF-EMF for junior high school students (distributed ~5000 schools)
- Seminars;
  for the general public, and
  for professionals

ARIB

Book of “Easy Science of Radio Wave”

Front cover

Example of the contents



ARIB

ARIB Standard and Technical Report Related to Human Exposure

ARIB STD-T56 v.2 /1998 “Specific Absorption Rate (SAR) Estimation for Cellular Phone ” established in January, 2002 is under revision work to harmonize with the relevant IEC standard being approved soon.
This gives the technical bases for the Japanese SAR regulation that has been put into practice since June 2002.

ARIB

Future schedule

- Continuous promotion of research on health issues of public concern:
  Regarding BBB effect (support of WHO EMF members collaboration study) and EMF estimations in semi-echoic environments (as farther investigations)
- Reinforcement of public information on website, and publication of a leaflet for high schools
- Maintenance of ARIB standards and technical papers

ARIB