# Response to HHS request for information on RF and EMF exposure

September 23, 2026

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Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure
Submitted by Patricia Eplee, Florida | Attention: Secretary Robert F. Kennedy, Jr.

I submit this original conceptual research proposal in response to the HHS request for information. It is a proposed framework and experimental design, not peer-reviewed research, a dataset, a clinical observation, or evidence of established health harm. I am a retired environmental chemistry and microbiology laboratory professional with more than 30 years of experience.

## Question 2  Perspective

I respond as an individual with laboratory experience. I do not represent an institution or claim to have conducted the RF experiments proposed here.

## Question 5  Exposure characteristics and research methods

I recommend that future assessments characterize more than average exposure magnitude. Study protocols should record carrier frequency, power density or absorbed dose as appropriate, modulation and pulse characteristics, duty cycle, harmonic content, duration, and simultaneous exposures. Comparisons should use calibrated, independently verified exposure systems and temperature monitoring. My proposed Bioelectromagnetic Compatibility Index (BCI) is a mathematical hypothesis for comparing signal characteristics with biological endpoints; it is not a validated exposure or risk metric.

## Question 8  Exposure assessment

A useful study would compare standard RF modulation with candidate modified signals under matched exposure conditions while testing communications performance. Such a comparison would help determine whether differences in biological measurements, if observed, are reproducible and attributable to signal characteristics rather than heat, dosimetry errors, or other confounders.

## Question 16  Federal research priorities

I propose blinded, independently replicated pilot experiments in cell cultures and organoids with sham controls and predefined outcomes, including mitochondrial membrane potential, ATP production, reactive oxygen species, calcium signaling, and inflammatory markers. Investigators should report null and inconsistent findings. The proposed BCI weights and sensitivity functions would need to be empirically defined and validated before they could have predictive use.

## Question 17  Research coordination

HHS could convene RF engineers, exposure scientists, and biomedical researchers to assess whether a feasible pilot protocol can be designed and which agency research program could evaluate it. Public methods, independent replication, and network-performance criteria would help make the results interpretable.

## Question 18  Additional technical recommendation

My related Infoton concept asks whether reducing the amount of information that must be transmitted could reduce transmission energy or signal complexity. I have proposed evaluating data compaction, including an AtomBeam approach, as the primary path, and an Infoton or BCI-guided signal-design layer as a complementary or backup path for the remaining transmission. This is a proposed architecture, not a tested integration with AtomBeam, a new physical particle, or evidence of a biological benefit. Any comparison would need matched information delivered, error rate, latency, security, energy use, RF exposure, and predefined biological endpoints.

The enclosed executive summary and framework describe the RF component of this hypothesis. They do not establish that current telecommunications signals cause medical harm, or that revised signals improve health. Any policy or standards recommendation should follow reproducible evidence.

Respectfully submitted,
Patricia Eplee

Included below: Executive summary and Bioelectromagnetic Compatibility Framework

# Executive summary of the Bioelectromagnetic Compatibility Framework

Prepared by Patricia Eplee | September 23, 2026

This proposal asks whether the architecture of a radiofrequency signal can be adjusted to reduce measurable biological stress signatures, if any are observed under controlled conditions, while preserving communications performance. It is a research framework requiring experimental validation.

## Research question

Do modulation structures, pulse envelopes, harmonic distributions, or low-frequency beat components produce reproducible differences in biological measurements at well-characterized exposures? If so, can signal design reduce those differences without degrading the intended network function?

## Related Infoton concept

As a separate, untested information-architecture proposal, evaluate whether data compaction could reduce the transmission required for the same useful information, with an Infoton or BCI-guided layer as a complementary or backup method for optimizing the signal that remains. AtomBeam compaction was proposed as a primary candidate; no partnership, technical integration, or performance result is asserted here.

## Proposed model

The Bioelectromagnetic Compatibility Index (BCI) represents a weighted overlap between a signal spectrum and hypothesized biological sensitivity spectra: $BCI = \Sigma_i w_i \int |S(f)|^2 B_i(f)\, df$. $S(f)$ denotes the RF spectral distribution; $B_i(f)$ represents a proposed sensitivity spectrum for biological system i. The weights and sensitivity functions would have to be measured, justified, and tested before the index could predict anything.

## Measurements and study approach

Characterize carrier frequency, power density, modulation, pulse envelope, duty cycle, harmonics, coherence duration, and interference patterns. Compare standard and candidate modified signals under matched, independently verified exposure conditions. Begin with blinded cell-culture and organoid experiments using predefined endpoints such as mitochondrial membrane potential, ATP production, reactive oxygen species, calcium flux, inflammatory markers, and gene-expression changes. Include sham exposure, temperature monitoring, replication, and network-performance measurements.

## Requested HHS consideration

Invite independent RF engineering and biomedical researchers to assess whether a pilot protocol is feasible within the federal research agenda. Any signal optimization or standards implications should depend on reproducible results, not on the model alone.

# Biologically Informed RF Signal Optimization

A Mathematical Framework for Minimizing Potential Non-Thermal Interference with Human Mitochondrial and Bioelectrical Systems


## Abstract

This manuscript proposes a testable engineering framework for evaluating whether radiofrequency (RF) signal architecture can be optimized to reduce potential non-thermal biological stress signatures while preserving telecommunications performance. The framework introduces a Bioelectromagnetic Compatibility Index (BCI) that quantifies overlap between RF spectral characteristics and biologically sensitive oscillatory domains.


## Core hypothesis

Certain RF modulation structures, pulse envelopes, harmonic distributions, and low-frequency beat components may interact with biological oscillatory systems. These interactions may be reducible through mathematically optimized signal redesign.

## RF variables

Carrier frequency, power density, modulation type, pulse envelope, duty cycle, harmonic content, coherence duration, and multi-tower interference patterns.

## Biological targets

Mitochondrial membrane potential, ATP output, reactive oxygen species (ROS), calcium signaling, inflammatory cytokines, apoptosis markers, circadian markers, heart-rate variability, and neural excitability.

## Mathematical model

$$BCI = \Sigma_i \, w_i \int |S(f)|^2 \, B_i(f) \, df$$

Where $S(f)$ is the RF spectral distribution and $B_i(f)$ represents biological sensitivity spectra for mitochondrial, neural, cardiac, circadian, and calcium-signaling systems.

## Experimental design

Compare standard RF modulation against optimized low-BCI modulation using cell cultures, organoids, and controlled observational studies. Measure ATP production, ROS generation, calcium flux, inflammatory signaling, and gene-expression changes.

## Publication positioning

This proposal does not claim established harm or medical causation. It presents a falsifiable engineering and bioelectromagnetic compatibility framework designed for experimental validation.